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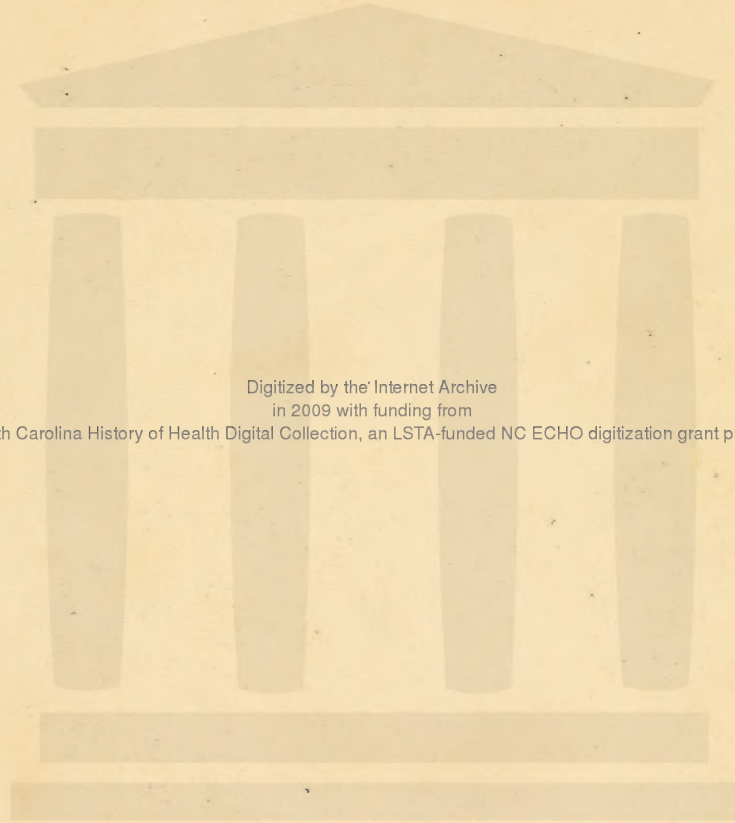

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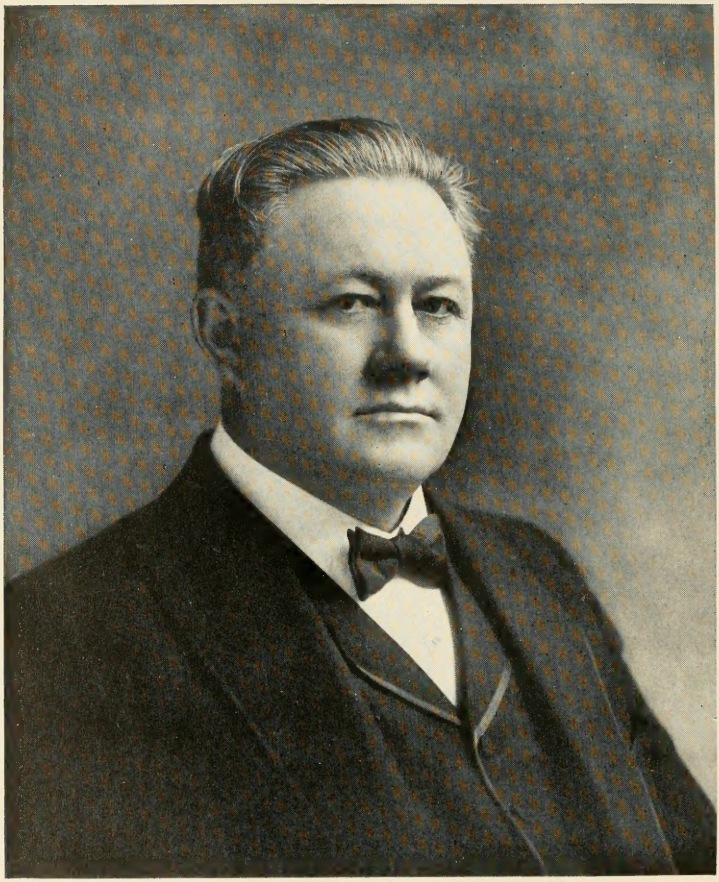

Very Truly Yours,

F. B. McBrayer

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

SIXTY-SECOND ANNUAL MEETING

HELD AT

GREENSBORO, NORTH CAROLINA

JUNE 15, 16, 17, 1915

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1915

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"It is understood that the society is not to be considered as indorsing all the views and opinions of authors of papers published in the Transactions of the Society."—*Extract from By-Laws, chapter 10, section 8.*

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ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM ORGANIZATION TO 1915.

*Missing Data Not to be Found in Records.

	Date.	Place.	Members in Attendance.	President.	Vice Presidents.	Secretary.	Treasurer.	Members on Roll.*	Honorary Members.*	Honorary Fellows.*
	1849	Raleigh	25	F. J. Hill		W. H. McKee		25		
1	1850	Raleigh	21	Edmund Strudwick	F. J. Haywood, C. E. Johnson, J. W. Williamson, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	
2	1851	Raleigh	23	Edmund Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	9	
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	
5	1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	
9	1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham			
11	1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	233	18	
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	
13	1866	Raleigh	20	J. J. Summerell		W. G. Thomas	C. W. Graham			
14	1867	Tarboro	41	W. G. Thomas	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	S. S. Satchwell	C. W. Graham	288	11	
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George E. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones			
16	1869	Salisbury	36	E. Burke Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones			
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Lucky, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones			
18	1871	Raleigh	35	Hugh Kelly	D. N. Patterson, R. C. Pearson, J. B. Scaby, G. L. Kirby.	Thomas F. Wood	J. W. Jones			
19	1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones			

ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA—CONTINUED.

*MISSING DATA NOT TO BE FOUND IN RECORDS.

	Date.	Place.	Members in Attendance.	President.	Vice Presidents.	Secretary.	Treasurer.	Members on Roll.*	Honorary Members.*	Honorary Fellows.*
20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, T. P. Jerman.	James McKee	H. T. Bahnson			
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson			
22	1875	Wilson	60	J. W. Jones	Walter Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Stith.	L. J. Picot	A. G. Carr	194	6	
26	1879	Greensboro	109	Charles Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	L. J. Picot	A. G. Carr	225	6	
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	
29	1882	Concord	65	Thomas F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	348	7	
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	R. L. Payne, Jr.	438	7	
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Poole, H. B. Ferguson.	J. M. Baker	R. L. Payne, Jr.	452	7	
35	1888	Fayetteville	133	T. D. Haigh	W. P. Ennett, J. A. Dunn, T. E. Anderson	J. M. Baker	C. M. Poole	306	6	
36	1889	Elizabeth City	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long	J. M. Baker	C. M. Poole	410	6	
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. W. Booth	J. M. Hays	C. M. Poole	414	6	
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly	J. M. Hays	C. M. Poole	422	6	
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	C. M. Poole	431	6	

40	1893	Raleigh	221	J. W. McNeill	W. G. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3
41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodge, R. W. Tate, Willis Alston, M. H. Fletcher.	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro		J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte		Francis Duffy	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell.	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.	George W. Pressly	G. T. Sikes	489	6	16
47	1900	Tarboro	115	George W. Long	C. M. Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	George W. Pressly	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.	George W. Pressly	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	George W. Pressly	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hay Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way	G. T. Sikes	1,033	8	17
52	1905	Greensboro	361	David T. Taylor	C. A. Julian, John T. Burrus, I. W. Faison	J. Howell Way	G. T. Sikes	1,175	8	17
53	1906	Charlotte	406	Edward C. Register	L. B. McBrayer, W. H. H. Cobb, Jr., W. O. Spencer.	J. Howell Way	G. T. Sikes	1,234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLoughlin, W. F. Hargrave.	David A. Stanton	H. McKee Tucker	888	7	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon	David A. Stanton	H. McKee Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Poole, D. A. Garrison, D. O. Dees	David A. Stanton	H. McKee Tucker	1,067	7	25
57	1910	Wrightsville B'ch	276	E. J. Wood	John Q. Myers, L. D. Wharton	David A. Stanton	H. D. Walker	1,080	8	35
58	1911	Charlotte	412	C. M. Van Poole	J. V. McGougan, W. E. Warren, L. N. Glenn	David A. Stanton	H. D. Walker	880	8	45
59	1912	Hendersonville	296	A. A. Kent	J. P. Munroe, W. P. Horton, J. G. Murphy	David A. Stanton	H. D. Walker	950	8	44
60	1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bullock, L. B. Morse	John A. Ferrell	H. D. Walker	1,133	8	40
61	1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, E. Sevier	John A. Ferrell	H. D. Walker	1,228	8	47
62	1915	Greensboro	443	L. B. McBrayer	J. J. Philips, C. W. Moseley, S. M. Crowell	John A. Ferrell	H. D. Walker	1,221	9	68

PAST MEMBERS BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA.

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Albert Anderson, Raleigh 1898–1902

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G. T. SIKES, Secretary, Grissom 1906–1908

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J. T. J. Battle, Greensboro 1902–1908
Frank H. Russell, Wilmington 1902–1908

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John C. Rodman, Washington 1908–1914
BENJAMIN K. HAYS, Secretary 1908–1914
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William W. McKenzie, Salisbury 1908–1914
Henry H. Dodson, Greensboro 1908–1914
J. L. Nicholson, Richlands 1908–1914

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J. G. BLOUNT, Washington, Practice of Medicine.
J. Q. MYERS, Charlotte, Pharmacology, Materia Medica, and Therapeutics.
I. M. TAYLOR, Morganton, Chemistry and Diseases of Children.
M. L. STEVENS, Asheville, Physiology, Pathology, and Hygiene.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH, FROM ORGANIZATION IN 1877 TO 1915.

Name.	Address.	Appointed by	Term.
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
Marcellus Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald, M.D.	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1893
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hillis, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1897
H. T. Bahnson, M.D., President	Winston-Salem	State Society	1887 to 1893
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1888
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1887 to 1889
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1889 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1893
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1892
J. M. Baker, M.D.	Tarboro	State Society	1889 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1891 to 1892
Thomas F. Wood, M.D., Secretary*	Wilmington	State Society	1891 to 1897
George G. Thomas, M.D., President	Wilmington	State Board of Health	1892 to 1897
S. Westray Battle, M.D.	Asheville	State Society	1891 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1892 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1893 to 1895
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1894 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1895 to 1897
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1895 to 1897
C. J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1897 to 1899
A. W. Shaffer, Sanitary Engineer	Raleigh	Gov. D. L. Russell	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901

*Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

ROSTER OF MEMBERS—CONTINUED.

Name.	Address.	Appointed by	Term.
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Northampton	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1913
James A. Burroughs, M.D.*	Asheville	State Society	1907 to 1909
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1915
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles J. O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
Richard H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.†	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1915 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921

*Died leaving unexpired term. †Resigned to become member of General Assembly.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1906-1915.

Counties.	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
Alamance	15	7	17	15	14	12	11	11	13	9
Alexander *a*										
Alleghany										2
Anson	3	1	3	1	1	1	6	8	7	
Ashe						1				
Avery *b*									8	7
Beaufort	10	15	15	11	11	16	15	14	14	14
Bertie	3	4	4	4	5	2	2	2	3	3
Bladen	4	4	3	3	3	4	4	5	7	7
Brunswick	4	4		4	2	2	2	5	4	5
Buncombe	37	47	48	54	58	63	64	69	68	70
Burke	8	10	9	10	13	12	11	13	15	17
Cabarrus	13	13	17	16	18	21	21	19	22	23
Caldwell	8	10	12	12	13	12	10	12	12	11
Camden *c*										
Carteret	9	9	10	7	7	6	7	6	7	7
Caswell	3	3	3	2	1	1	1	1	1	1
Catawba	8	10	9	12	12					15
Chatham		6	1	2	2	6		14	15	12
Cherokee	3			9	6	7	9	8	7	10
Chowan-Perquimans						7	5	8	9	7
Clay *d*										
Cleveland	12	14	14	13	13	14	15	15	16	13
Columbus	8	9	8	8	8	10	12	12	14	9
Craven	8	10	14	14	14	12	14	18	15	11
Cumberland-Hoke	8	12	12	17	20	20	22	23	22	24
Currituck	6	6	3	3	6	4	4	4	6	7
Dare *e*										
Davidson	11	12	12	12	13	13	15	13	17	13
Davie	3	6	6	6	6	5	6			
Duplin	5	8	8	10	10	9	8	9	7	4
Durham-Orange	16	15	18	24	26	28	31	32	38	40
Edgecombe	4	8	8	10	10	11	11	11	13	13
Forsyth	20	21	26	30	25	29	31	32	37	39
Franklin	8	10	10	9	11	11	11	10	10	12
Gaston	17	22	25	25	27	29	29	30	27	26
Gates	4	4	4							
Graham										
Granville	7	8	11	12	12	8	13	12	14	11
Greene	4	5	5	6	6	6	5	5	5	5
Guilford	39	54	62	64	65	56	58	59	62	71
Halifax	9	10	10	7	6	2	2	11	11	7
Harnett	13	16	18	19	15	14	17	17	16	17
Haywood	7	10	11	15	13	10	11	13	15	11
Henderson-Polk	10	11	15	14	14	17	17	11	14	14
Hertford	8	8	9	8	6	2		8	10	4
Hyde			5	8	6	6	6	7	7	
Iredell-Alexander	19	18	18	18	17	12	9	9	14	16
Jackson	5	2	2					2	3	5
Johnston	9	11	15	13	15	19	18	18	19	21
Jones										
Lee									7	8	7
Lenoir	11	12	13	9	12	6	8	9	12	14
Lincoln	7	8	8	10	10	10	11	12	13	14
Macon-Clay	3	3	4	5					4	4	5
Madison	7	11	11	12			10	7	8	11
Martin	6	9	9	13	13	13	12	13	14	14
McDowell	8	7		8	4	5	6	6	7	7
Mecklenburg	31	37	54	51	57	44	50	63	69	71
Mitchell-Avery		3	4	7	4	5	5	4	2	2
Montgomery	5	6	8	7	9	7	7	8	6	10
Moore	17	2	14	10	11	21	21	13	16	15
Nash								1		19	18
New Hanover	15	20	21	23	21	21	22	31	28	33
Northampton	7	9	9	8	11	9	1	12	12	11
Onslow	3	4	4	4	6	11	10	12	10	8
Orange	1	1	1	1	1	1	1	8		
Pamlico	3	3	4	5	4	4	4	5	5	5
Pasquotank-Camden-Dare	11	11	10	10	11	12	12	13	15	15
Pender						2	2	2	2	
Perquimans *f*										
Person	6	7	8	9	9	10	11	11	8	11
Pitt	11	11	9	14	10	10	5	9	5	15
Polk *g*										
Randolph	6	6	9	9	10	8	9	7	12	14
Richmond	11	11	11	1	12	1	10		10	13
Robeson	16	24	24	20	15	22	23	35	24	16
Rockingham	2	5	5	1	16	16	16	18	19	17
Rowan	19	27	25	23	24	26	24	23	26	22
Rutherford	15	16	17	22	23	24	18	19	20	19
Sampson	7	9	11	10	11	11	12	12	14	14
Scotland	7	8	11	10	11	9	9	11	12	12
Stanly	9	9	9	8	11	10	11	11	13	14
Stokes	11	5	10	11	9	10	11	7	12	13
Surry	10	13	15	15	15	13	14	19	21	19
Swain	6	6	6	8						
Transylvania	8	4	4	1		5	5	6	7	6
Tyrrell *h*										
Union	9	14	14	14	14	15	16	17	16	16
Vance	6	6	8	9	12	11	11	11	10	11
Wake	39	42	44	49	53	56	54	41	53	57
Warren				2			4	5	5	5	8
Washington-Tyrrell	3	4	5	10	11	11	11	11	9	9
Watauga										
Wayne	10	10	13	10			16	19	13	7
Wilkes	6	7	8	8	11	11	6	9	8	7
Wilson	10	12	12	16	17	17	17	17	24	22
Yadkin	9	10	11	8	6	6	6	7	7	6
Yancey	2		4	3						
Totals	769	865	979	1012	997	996	1036	1133	1220	1221

a See Iredell; *b* see Mitchell; *c* see Pasquotank; *d* see Macon; *e* see Pasquotank; *f* see Chowan; *g* see Henderson; *h* see Washington.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

Anderson, T. E.---Statesville
*Archey, L. M.---Concord
Asbury, F. E.---Worthville
Attmore, G. S.---Stonewall
Bahnson, H. T.---Winston-Salem
Baker, J. M.---Tarboro
Battle, K. P., Jr.---Raleigh
Beall, W. P.---Greensboro
Bellamy, W. J. H.---Wilmington
Bulluck, D. W.---Wilmington
Clark, G. L.---Clarkton
Denny, W. L.---Pink Hill
Dillard, Richard---Edenton
*Duffy, Charles---New Bern
*Duffy, Francis---New Bern
Faison, I. W.---Charlotte
Faison, W. W.---Goldsboro
Fletcher, M. H.---Asheville
Fox, M. F.---Guilford College
Freeman, R. A.---Burlington
Galloway, W. C.---Wilmington
Hall, Wright---Wilmington
Hargrove, R. H.---Robersonville
Harris, I. A.---Buncombe
*Haywood, F. J.---Raleigh
Hill, L. H.---Germanton
Hunter, L. W.---Sardis
Irwin, J. R.---Charlotte
Johnson, N. M.---Durham
Knox, A. W.---Raleigh
Lewis, R. H.---Raleigh
Long, G. W.---Graham
Long, J. W.---Greensboro
Love, W. J.---Wilmington
McDonald, A. D.---Wilmington
McMillan, J. D.---Edenton
McMillan, W. D.---Wilmington
McNeill, J. W.---Fayetteville
Meisenheimer, C. A.---Charlotte
Meisenheimer, T. T.---Morven
Moore, C. E.---Wilson
Nicholson, J. L.---Richlands
Noble, R. J.---Selma

*Deceased.

Nobles, J. E.----------Greenville
Perry, M. P.----------Macon
Pharr, T. F.----------Concord
Picot, L. J.----------Raleigh
Prince, D. M.----------Laurinburg
Royster, W. I.----------Raleigh
Schonwald, J. L.----------Wilmington
Shaffner, T. F.----------Winston-Salem
Sikes, G. T.----------Grissom
Smith, R. A.----------Goldsboro
Speight, R. H.----------Whitakers
Taylor, I. M.----------Morganton
Thomas, G. G.----------Wilmington
Trantham, H. L.----------Salisbury
Tull, Henry----------Kinston
VanPoole, C. M.----------Salisbury
Ward, W. H.----------Plymouth
Weaver H. B.----------Asheville
Whitaker R. A.----------Kinston
Whitehead, John----------Salisbury
Whitehead, J. W.----------Salisbury
Whittington, W. P.----------Asheville
Williams, J. H.----------Asheville
Wilson, A. R.----------Greensboro
*Young, R. S.----------Concord

The following members have been proposed for honorary fellowship. Their records will be investigated as early as practicable, and these and other members who are found to be eligible will be placed on the list of honorary fellows next year: N. P. Boddie, D. G. Caldwell, J. A. Griffin, B. L. Long, E. N. Summerell.

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

L. McL. Tiffany----------Baltimore, Md.
W. W. Keen----------Philadelphia, Pa.
J. Allison Hodges----------Richmond, Va.
R. L. Payne----------Norfolk, Va.
J. N. McCormack----------Bowling Green, Ky.
*J. C. Walton----------Richmond, Va.
R. L. Payne, Jr.----------Norfolk, Va.
J. L. Ludlow, C.E.----------Winston-Salem
Paul V. Anderson----------Richmond, Va.

*Deceased.

OFFICERS FOR 1914-1915.

President—Dr. L. B. McBrayer.....Sanatorium
First Vice President—Dr. J. J. Phillips.....Tarboro
Second Vice President—Dr. C. W. Moseley.....Greensboro
Third Vice President—Dr. S. M. Crowell.....Charlotte
Secretary—Dr. John A. Ferrell.....New York City
Treasurer—Dr. H. D. Walker.....Elizabeth City
Leader in Debate—Dr. L. B. Evans.....Clarkton
Orator—Dr. J. M. Northington.....Boardman
Essayist—Dr. Mary E. Lapham.....Highlands

COUNCILORS, 1913-1916.

Chairman—Dr. M. L. Stevens.....Asheville
Secretary—Dr. K. P. B. Bonner.....Morehead City
First District—Dr. J. L. Spruill.....Columbia
Second District—Dr. K. P. B. Bonner.....Morehead City
Third District—Dr. L. B. Evans.....Clarkton
Fourth District—Dr. M. M. Saliba.....Wilson
Fifth District—Dr. Peter John.....Laurinburg
Sixth District—Dr. R. L. Felts.....Durham
Seventh District—Dr. A. J. Crowell.....Charlotte
Eighth District—Dr. W. M. Jones.....Greensboro
Ninth District—Dr. D. J. Hill.....Lexington
Tenth District—Dr. M. L. Stevens.....Asheville

For the names of delegates and membership of committees, see pages 381 and 384, in the minutes of the House of Delegates.

OFFICERS FOR 1915-1916.

President—Dr. M. H. Fletcher.....Asheville
First Vice President—Dr. J. L. Nicholson.....Richlands
Second Vice President—Dr. L. N. Glenn.....Gastonia
Third Vice President—Dr. M. H. Hardison.....Creswell
Secretary—Dr. B. K. Hays.....Oxford
Treasurer—Dr. W. M. Jones.....Greensboro

CHAIRMEN OF SECTIONS.

Practice of Medicine:
Chairman, Dr. Paul H. Ringer, Asheville.

Surgery:
Chairman, Dr. John Wesley Long, Greensboro.

Anatomy:
Chairman, Dr. C. O. Abernethy, Raleigh.

Pathology and Bacteriology:
Chairman, Dr. William Allan, Charlotte.

Physiology and Chemistry:
Chairman, Dr. John B. Watson, Raleigh.

Public Health and Education:
Chairman, Dr. George M. Cooper, Clinton.

Gynecology:
Chairman, Dr. J. P. Monroe, Sanford.

Pediatrics:
Chairman, Dr. E. J. Wood, Wilmington.

Obstetrics:
Chairman, Dr. Ben. H. Hackney, Bynum.

Materia Medica and Therapeutics:
Chairman, Dr. E. G. Moore, Elm City.

Eye, Ear, Nose:
Chairman, Dr. K. P. Battle, Raleigh.

PROGRAM.

Opening Session, Tuesday, June 15, 1915—9:30 A. M., the Opera House.

Call to Order—Dr. J. T. J. Battle, chairman Committee on Arrangements.
Invocation—Dr. Charles W. Byrd, pastor West Market Street M. E. Church.
Address of Welcome—Mayor T. J. Murphy, Greensboro.
Response to Address of Welcome—Dr. Benjamin K. Hays, Oxford.
President's Annual Address—Dr. L. B. McBrayer, Sanatorium.
Report of Committee on Arrangements—Dr. J. T. J. Battle, chairman; Dr. William M. Jones.
Report of Reception Committee—Dr. J. W. Long, chairman; Dr. John A. Williams, Dr. W. P. Beall, Dr. D. A. Stanton, Dr. Charles Roberson.

PHYSIOLOGY AND CHEMISTRY.

Dr. Robert H. Lafferty, Charlotte, *Chairman.*

Common Types of Organic Disease of the Heart; Report of Case (Illustrated)—Dr. J. P. Munroe, Charlotte.
Some Physiologic and Bio-chemic Observations on Milk—Dr. William F. Carstarphen, Wake Forest.
The Vegetative Nervous System—Dr. R. F. Leinbach, Charlotte.
The Physical Functions of the Nose—Dr. C. N. Peeler, Charlotte.
The Kidney Functional Tests—Dr. Robert H. Lafferty, Charlotte.
Subject Unannounced—Dr. C. S. Mangum, Chapel Hill.

Tuesday Afternoon, 2:30 o'clock.

MEDICAL JURISPRUDENCE AND STATE MEDICINE.

Dr. Fletcher R. Harris, Henderson, *Chairman.*

SYMPOSIUM ON NARCOTICS.

The Relation of the Doctors in North Carolina to State Medicine—Dr. C. T. Nesbitt, Wilmington.
State Laws Needed—Dr. Robert T. Upchurch, Henderson.
The Harrison Anti-narcotic Law and the Duty of the Profession—Dr. J. Howell Way, Waynesville.
A Few Remarks About the Harrison Anti-narcotic Law, Based Upon Its Enforcement Since Last March—Dr. S. M. Crowell, Charlotte.
What North Carolina Should Do in the Regulation of the Sale and Use of Narcotics—Hon. J. W. Bailey, Collector of Internal Revenue for the Eastern District of North Carolina, Raleigh.

Chemistry of Patent Medicines—Dr. E. V. Howell, Chapel Hill.
Patent Medicines versus Prohibition—Dr. Cyrus Thompson, Jacksonville.
Should the Religious Press Aid and Abet in the Sale of Patent Medicines and Other Narcotics in North Carolina Under a Nom de Plume?—Dr. J. T. J. Battle, Greensboro.

Should North Carolina Send Her Drug Habitués to the Chain-gang or Give Them Humane Treatment?—Dr. W. M. Jones, Greensboro.

A Study of Some Statistics and Reports of the Institutions for the Insane—Dr. T. M. Jordan, Raleigh.

Prevention of Insanity by the Proper Treatment of Whiskey and Drug Habitués—Dr. Albert Anderson, Raleigh.

MATERIA MEDICA AND THERAPEUTICS.

Dr. Forrest A. Carpenter, Statesville, *Chairman.*

Therapeutics, Old and New—Dr. R. A. Campbell, Statesville.

Occupation as a Therapeutic Agent—Dr. Paul V. Anderson, Richmond.

Heart Stimulants and Tonics—Dr. W. P. Beall, Greensboro.

Have Alcoholics a Place in Medical Therapeutics?—Dr. J. F. McKay, Buies Creek.

Rest the Most Important Single Factor in the Treatment of Tuberculosis—Dr. L. B. Morse, Hendersonville.

Therapeutic Uses of Some of the Products of the Ductless Glands—Dr. H. B. Weaver, Asheville.

Health Conservation as an Economic Factor—Dr. L. G. Beall, Greensboro.

The Teaching of Pharmacology—Dr. William deB. MacNider, Medical Department, University of North Carolina, Chapel Hill.

Tuesday Afternoon, 2:30 o'clock.

SURGERY.

Dr. John A. Williams, Greensboro, *Chairman.*

SYMPOSIUM ON CANCER.

The Percy Cautery in Treatment of Cancer of Uterus—Dr. E. A. Lockett, Winston-Salem.

Sarcoma of the Long Bones—Dr. J. F. Highsmith, Fayetteville.

The Cancer Problem—Dr. J. W. Long, Greensboro.

Neglect of Visible Lesions (Illustrated)—Dr. Watt Cole, Greensboro.

Early Diagnosis of Cancer—Dr. J. M. Wainwright, chairman Committee on Health and Public Instruction, Amer. Medical Association, Scranton, Pa.

What Every Physician Should Preach About Cancer—Dr. H. A. Royster, Raleigh.

Concerning the Early Diagnosis of Cancer—Dr. Frederic E. Sondern, 200 West Fifty-sixth Street, New York City.

The Autolysin Treatment of Cancer—Dr. W. E. Fitch, New York City.

Treatment of the Bone When Amputating Extremities—Drs. D. W. and Ernest Bulluck, Wilmington.

Drainage and Dressings—Dr. H. S. Lott, Winston-Salem.

Calculi of the Genito-Urinary Tract—Dr. A. J. Crowell, Charlotte.

Dangers and Difficulties in Appendicitis—Dr. J. T. Burrus, High Point.

Pancreatic Cysts, with Report of Case—Dr. Lyle S. Booker, Durham.

Pellagra and Other Changes in Mentality in Surgical and Gynecological Practice—Dr. W. O. Spencer, Winston-Salem.

Post-Operative Intestinal Obstruction—Report of Case—Dr. A. deTalma Valk, Winston.

Some Gastro-Intestinal Cases; Clinical Report and Lantern Slide Demonstrations—Dr. C. S. Lawrence, Winston.

Goiter (Lantern Slide Illustrations)—Dr. Addison G. Brenizer, Charlotte.

Comparative Ultimate Results of Abdominal Section—Dr. Charles Moore, Greensboro.

A Report on Cases Where I Introduced Ether Into the Peritoneal Cavity in Severe Peritoneal Infections—Dr. C. E. Wilkerson, Randleman.

The Positive Value of X-Ray in Diagnosis—Dr. H. H. Dodson, Greensboro.

Chronic Prostatitis and Its Nonoperative Treatment—Dr. H. W. McCain, High Point.

Evolution of the Modern Mastoid Operation—Dr. W. W. Carter, Washington.

Subject Unannounced—Dr. J. M. Parrott, Kinston.

Subject Unannounced—Dr. D. T. Tayloe, Washington.

Subject Unannounced—Dr. C. E. Wilkerson, Randleman.

Tuesday Evening, 8:30 o'clock.

ANATOMY.

Dr. Hubert B. Haywood, Jr., Raleigh, *Chairman.*

Some Practical Observations on the Prostatic Portion of the Male Urethra—Dr. C. O. Abernethy, Raleigh.

The Surgical Anatomy of the Anterior Abdominal Wall—Dr. W. T. Tankersley, Greensboro.

Surgical Anatomy of the Thyroid Gland—Dr. John E. Ray, Jr., Raleigh.

Papilloma of the Bladder—Dr. Parran Jarboe, Greensboro.

Fractional Gastric Analysis on Some Obscure Abdominal Conditions (Illustrated)—Dr. Albert Carroll, Baltimore.

Some Points in the Surgical Anatomy and Relations of the Appendix—Dr. E. S. Boice, Rocky Mount.

Subject Unannounced—Dr. E. C. Judd, Raleigh.

PATHOLOGY AND BACTERIOLOGY.

Dr. Richard N. Duffy, New Bern, *Chairman.*

The Autoserotherapy of Pellagra—Dr. Edward J. Wood, Wilmington.

Source of Renal Infections—Dr. S. R. Thompson, Charlotte.

The Pathology of the Cerebro-spinal Fluid in Various Forms of Meningitis—Dr. Hubert B. Haywood, Jr., Raleigh.

The Relative Toxicity of Ether and Chloroform in Experimental Nephritis—Dr. William deB. MacNider, Chapel Hill.

Laboratory Findings—Blood and Spinal Fluid in Syphilitic and Nonsyphilitic Diseases—Dr. H. J. Maldeis, Baltimore.

Relative Merits of Transfusion, Infusion, and Hypodermoclysis in Severe Hemorrhage—Dr. W. T. Parrott, Kinston.

The Meaning of Water Analysis—Dr. C. A. Shore, Raleigh.

The Pathology of the Tabetic Bladder—Dr. R. N. Duffy, New Bern.

Tuesday Evening, 8:30 o'clock.

OBSTETRICS.

Dr. D. A. Garrison, Gastonia, *Chairman.*

The Fundamental Principles Involved in Obstetric Surgery—Dr. Roscoe D. McMillan, Red Springs.
Pituitrin in Obstetrics—Dr. C. H. Pugh, Stanley.
Subject Unannounced—Dr. W. H. Dixon, Ayden.
Subject Unannounced—Dr. George P. Spears, 203 W. 103d Street, New York City.

GYNECOLOGY.

Dr. E. T. Dickinson, Wilson, *Chairman.*

Neurasthenia in Relation to Gynecology—Dr. Rosalie Slaughter Morton, New York City.
Uterine Curettement—Dr. R. L. Payne, Sr., Norfolk.
Ectopic Gestation—Dr. John Saliba, Elizabeth City.
Cancer of the Uterus—Dr. E. T. Dickinson, Wilson.

Wednesday Morning, 9 o'clock.

PEDIATRICS.

Dr. L. W. Elias, Asheville, *Chairman.*

Three Needs of a Child—Dr. L. W. Elias, Asheville.
Tuberculosis, a Disease of Childhood—Dr. Thompson Frazer, Asheville.
Some of the Most Important Points in the Management of Infants the First Six Months—Drs. I. W. and Yates W. Faison, Charlotte.

PRACTICE OF MEDICINE.

Dr. Wilbur A. McPhaul, Lumberton, *Chairman.*

SYMPOSIUM ON TUBERCULOSIS.

Tuberculosis in Schools and Colleges—Dr. James B. Bullitt, Professor Pathology, Medical Department, University of North Carolina, Chapel Hill.
The Opportunity of the Medical Profession in the Fight Against Tuberculosis in North Carolina—Dr. P. P. McCain, Assistant Superintendent, North Carolina State Sanatorium for Treatment of Tuberculosis.
Diagnosis of Incipient Tuberculosis by the General Practitioner—Dr. Charles O'H. Laughinghouse, Greenville.
Positive Diagnosis by the X-Ray (Illustrated)—Dr. H. H. Dodson, Greensboro.
Short Paragraphs in Medicine and Surgery—Dr. H. D. Stewart, Monroe.
The Treatment of Pellagra—Dr. E. H. Bowling, Durham.
The Cause of Pellagra, and Treatment Suggestions—Dr. B. W. Page, Lumberton.
An Experimental Study of the Intraspinous Method of Therapy in Syphilis of the Nervous System—Dr. Frederic M. Hanes, Richmond, Va.

Discussion of Sippy Method of Treatment of Gastric and Duodenal Ulcers—Dr. W. O. Nesbett, Charlotte.

Pyorrhea—Dr. J. A. Sinclair, Asheville.

Typhoid—Dr. L. L. Lumsden, United States Public Health Service.

Some Suggestions on the Treatment of Rheumatism—Dr. George E. Kornegay, Kinston.

Exhaustion of Contractility of the Heart Muscle with Pulsus Alternans—Dr. William Allen, Charlotte.

Asthma Caused by Nasal Conditions—Dr. E. R. Russell, Asheville.

The Nasal Septum—Dr. John B. Wright, Raleigh.

The Diagnostic Value of Headaches—Dr. W. Perry Reaves, Greensboro.

Chronic Local Infection of the Nose, Throat, and Ear—Dr. M. R. Gibson, Raleigh.

Wednesday, June 16, 12 o'clock.

CONJOINT SESSION.

Conjoint Session of Medical Society of State of North Carolina and the North Carolina State Board of Health.

MEMBERS OF THE STATE BOARD OF HEALTH.

J. Howell Way, M.D., *President*.....Waynesville.
Richard H. Lewis, M.D.....Raleigh.
J. C. Ludlow, C.E.....Winston-Salem.
W. O. Spencer, M.D.....Winston-Salem.
Thomas E. Anderson, M.D.....Statesville.
Charles O'H. Laughinghouse, M.D.....Greenville.
Edward J. Wood, M.D.....Wilmington.
A. A. Kent, M.D.....Lenoir.
Cyrus Thompson, M.D.....Jacksonville.

EXECUTIVE STAFF STATE BOARD OF HEALTH.

W. S. Rankin, M.D.....Secretary and Treasurer.
C. A. Shore, M.D.....Director State Laboratory of Hygiene.
George M. Cooper, M.D.....Chief, Bureau Rural Sanitation.
J. R. Gordon, M.D.....Chief, Bureau Vital Statistics.
Warren H. Booker, C.E.....Chief, Bureau Education and Engineering.
L. B. McBrayer, M.D.....Chief, Bureau Tuberculosis.

ORDER OF BUSINESS.

1. Reports of work accomplished, and recommendations.
2. Discussions.
3. Election of officers.
4. Election of Secretary to the State Board of Health (six years).
5. New business.
6. Adjournment.

Wednesday Afternoon, 2:30 o'clock.

CONSERVATION OF VISION.

DR. C. W. BANNER, Greensboro, *Chairman.*
DR. LOUISE MERRIMON, Asheville, *Associate Chairman.*

Economics of the Prevention of Blindness—MR. JOHN E. RAY, Superintendent. North Carolina State School for the Blind, Raleigh.
Prevention of Blindness—MR. GORDON L. BERRY, New York City.
Conservation of Vision—DR. J. G. MURPHY, Wilmington.
A Few Words on Prisms—DR. R. H. LEWIS, Raleigh.
Amblyopia from Wood Alcohol—DR. F. J. PATE, Winston-Salem.
Subject Unannounced—DR. JOHN HILL TUCKER, Charlotte.

Wednesday Evening, 8:30 o'clock.

1. *Report of Committee on Obituaries*—DR. M. H. FLETCHER, Asheville; DR. A. W. KNOX, Raleigh; DR. M. L. STEVENS, Asheville.
2. Essay, *The Present Status of Tuberculosis Knowledge*—DR. MARY E. LAPHAM, Highlands.
3. Oration, *The Internationalized Profession*—DR. J. M. NORTHINGTON, Boardman.

Thursday Morning, 9 o'clock.

HYGIENE, SANITATION, AND PREVENTIVE MEDICINE.

DR. W. J. MCANALLY, High Point, *Chairman.*

Inheritance of Mental Characteristics—DR. H. W. CHASE, Chapel Hill.
Heredity's Relation to Feeble-mindedness—DR. C. B. MCNAIRY, Kinston.
Rural Hygiene—DR. D. C. ABSHER, Henderson.
The House-fly in Society—MR. L. M. MCCORMACK, Asheville.
Some Facts Concerning Heredity—DR. S. S. COE, High Point.

MINUTES

OF THE

STATE MEDICAL SOCIETY.

TUESDAY MORNING, JUNE 15, 1915.

Call to order by Dr. J. T. J. Battle, chairman Committee on Arrangements.

Invocation: Dr. Charles W. Byrd.

Address of welcome: Hon. T. J. Murphy, mayor of Greensboro.

Response to address of welcome: Dr. Benjamin K. Hays, Oxford.

President's annual address: Dr. L. B. McBrayer, Sanatorium.

President's address referred, on motion, to special committee, composed of Drs. Laughinghouse, Way, and Bonner, for consideration.

Report of Committee on Arrangements.

Adoption of resolution indorsing the effort of the Daughters of the Confederacy to raise funds for the erection of a monument to Samuel Preston Moore.

Section on Physiology and Chemistry.

Papers read:

The Vegetative Nervous System—Dr. R. F. Leinbach, Charlotte.

Some Physiologic and Bio-Chemic Observations on Milk—Dr. William T. Carstarphen, Wake Forest.

TUESDAY AFTERNOON.

Section on Surgery.

Dr. J. A. Williams in the chair.

Papers read:

Drainage and Dressings—Dr. H. S. Lott, Winston-Salem.

Dangers and Difficulties in Appendicitis—Dr. J. T. Burrus, High Point.

Treatment of the Bone When Amputating Extremities—Drs. D. W. and Ernest Bulluck, Wilmington.

Pancreatic Cyst, with Report of Case—Dr. Lyle S. Booker, Durham.

TUESDAY AFTERNOON.

Section on Medical Jurisprudence and State Medicine.

Dr. C. W. Mosely, second vice president, in the chair.

Papers read:

The Relation of the Medical Profession to State Medicine—Dr. Charles T. Nesbitt, Wilmington.

What North Carolina Should Do in the Regulation of the Sale and Use of Narcotics—Hon. J. W. Bailey, Commissioner of Internal Revenue for the Eastern District of North Carolina, Raleigh.

On motion by Dr. Way, a rising vote of thanks was given Mr. Bailey for his entertaining and instructive address.

The Harrison Anti-Narcotic Law and the Duty of the Profession—Dr. J. Howell Way, Waynesville.

A Few Remarks About the Harrison Anti-Narcotic Law Based Upon Its Enforcement Since Last March—Dr. S. M. Crowell, Charlotte.

The Autoserotherapy of Pellagra—Dr. Edward J. Wood, Wilmington.

Chemistry of Patent Medicines—Dr. E. V. Howell, Chapel Hill.

Should the Religious Press Aid and Abet in the Sale of Patent Medicines and Other Narcotics in North Carolina Under a Nom de Plume?—Dr. J. T. J. Battle, Greensboro.

Should North Carolina Send Her Drug Habitués to the Chain-gang or Give Them Humane Treatment?—Dr. W. M. Jones, Greensboro.

A Study of Some Statistics and Reports of the Institutions for the Insane—Dr. T. M. Jordan, Raleigh.

Prevention of Insanity by the Proper Treatment of Whiskey and Drug Habitués—Dr. Albert Anderson, Raleigh.

Tuesday Evening.

Dr. McBrayer presiding.

Motion by Dr. F. R. Harris that the papers in the Symposium on Narcotics be referred to the Committee on Publication for consideration as to the advisability of publishing them. Carried.

Section on Surgery—Symposium on Cancer.

Papers read:

The Percy Cautery in Treatment of Cancer of the Uterus—Dr. E. A. Lockett, Winston-Salem.

Sarcoma of Bone, with Case Report—Dr. J. F. Highsmith and Dr. R. L. Pittman, Fayetteville.

The Cancer Problem—Dr. J. W. Long, Greensboro.

Neglect of Visible Lesions—Dr. Watt Cole, Greensboro.

Early Diagnosis of Cancer—Dr. J. M. Wainwright, Scranton, Pa.

What Every Physician Should Preach About Cancer—Dr. H. A. Royster, Raleigh.

Concerning the Early Diagnosis of Cancer—Dr. Frederic E. Sondern, New York City.

The Autolysin Treatment for Cancer—Dr. W. E. Fitch, New York City.

Wednesday Morning.

Dr. McBrayer in the chair.

Section on Materia Medica and Therapeutics.

Papers read:

Therapeutics, Old and New—Dr. R. A. Campbell, Statesville.
Occupation as a Therapeutic Agent—Dr. Paul V. Anderson, Richmond, Va.
Heart Stimulants and Tonics—Dr. W. P. Beall, Greensboro.
Have Alcoholics a Place in Medical Therapeutics?—Dr. J. F. McKay, Buies Creek.
Rest—The Most Important Single Factor in the Treatment of Tuberculosis—Dr. L. B. Morse, Hendersonville.
Therapeutic Uses of Some of the Products of the Ductless Glands—Dr. H. B. Weaver, Asheville.
Health Conservation as an Economic Factor—Dr. L. G. Beall, Greensboro.

Section on Physiology and Chemistry.

Papers read:

The Physical Functions of the Nose—Dr. C. N. Peeler, Charlotte.
The Kidney Functional Tests—Dr. Robert H. Lafferty, Charlotte.

Section on Pediatrics.

Papers read:

Three Needs of a Child—Dr. L. W. Elias, Asheville.
Tuberculosis, a Disease of Childhood—Dr. Thompson Frazer, Asheville.

Conjoint session of State Board of Health and State Medical Society.

Wednesday Morning.

Section on Surgery.

Dr. W. H. Jones in the chair.
Papers read:

Pellagra and Other Changes in Mentality in Surgical and Gynecological Practice—Dr. W. O. Spencer, Winston-Salem.
Comparative Ultimate Results of Abdominal Section—Dr. Charles Moore, Greensboro.
Some Gastro-Intestinal Cases; Clinical Report—Dr. C. S. Lawrence, Winston-Salem.

Section on Anatomy.

Called to order by Dr. Watt Cole.
Papers read:

Some Practical Observations on the Prostatic Portion of the Male Urethra—Dr. C. O. Abernethy, Raleigh.
Surgical Anatomy of the Thyroid Gland—Dr. John E. Ray, Jr., Raleigh.

WEDNESDAY AFTERNOON.

Dr. McBrayer in the chair.

Section on Pediatrics.

Papers read:

Some of the Most Important Points in the Management of Infants the First Six Months—Dr. I. W. Faison, Charlotte.

Section on Practice of Medicine.

Papers read:

Tuberculosis in Schools and Colleges—Dr. James B. Bullitt, Chapel Hill.
Diagnosis of Incipient Tuberculosis by the General Practitioner—Dr. Charles O'H. Laughinghouse, Greenville.
A Personal Estimate of Psycho-Analysis as a Diagnostic Method in Nervous Disease—Dr. J. Allison Hodges, Richmond, Va.
Address by Dr. Southgate Leigh, Norfolk, Va.
Pyorrhea—Dr. J. A. Sinclair, Asheville.

WEDNESDAY AFTERNOON.

Section on Gynecology.

Dr. S. M. Crowell in the chair.
Papers read:

Uterine Curettement—Dr. R. L. Payne, Sr., Norfolk.
Cancer of the Uterus—Dr. E. T. Dickinson, Wilson.
Pituitrin in Obstetrics—Dr. C. H. Pugh, Stanley.
Neurasthenia in Relation to Gynecology—Dr. Rosalie Slaughter Morton, New York City.

WEDNESDAY EVENING.

Dr. McBrayer presiding.

Address: *Typhoid*—Dr. L. L. Lumsden, U. S. Public Health Service.

Report of Committee on Obituaries.

Annual Essay: *The Present Status of Tuberculosis Knowledge*—Dr. Mary E. Lapham, Highlands.

Annual Oration: *The Internationalized Profession*—Dr. J. M. Northington, Boardman.

Thursday Morning.

Section on Practice of Medicine.

Called to order by Dr. C. W. Mosely, vice president.
Papers read:

Asthma Caused by Nasal Conditions—Dr. E. R. Russell, Asheville.
The Diagnostic Value of Headaches—Dr. W. Perry Reaves, Greensboro.

Section on Conservation of Vision.

Called to order by Dr. C. W. Mosely, vice president.
Papers read:

Economics of the Prevention of Blindness—Mr. John E. Ray, Superintendent, North Carolina State School for the Blind, Raleigh.
Saving Sight—Saving Citizens—Mr. Gordon L. Berry, New York City.
Conservation of Vision—Dr. J. G. Murphy, Wilmington.
Amblyopia from Wood Alcohol—Dr. F. J. Pate, Winston-Salem.

Section on Hygiene, Sanitation, and Preventive Medicine.

Dr. McBrayer in the chair.
Papers read:

Heredity's Relation to Feeble-mindedness—Dr. C. B. McNairy, Kinston.
Hope and Menace of Heredity—Dr. W. J. McAnally, High Point.
Rural Sanitation—Dr. D. C. Absher, Henderson.

Report of Committee on Recommendations of President's Address.
Resolution of sympathy for Drs. Long and Booth.
Appointment of time for next meeting.
Report of Committee on Nominations.
Presentation of Dr. M. H. Fletcher by Dr. McBrayer.
Resolution of thanks to Greensboro.
Adjournment.

(Note.—As the proceedings of the conjoint session and of the sessions of the House of Delegates on Tuesday afternoon and Thursday are reported in full at the end of the transactions, no abstract is given here.)

TRANSACTIONS

OF THE

SIXTY-SECOND ANNUAL MEETING OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

OPENING SESSION,

TUESDAY MORNING, JUNE 15, 1915.

DR. J. T. J. BATTLE, chairman Committee on Arrangements: Ladies, gentlemen, and members of the Medical Society of the State of North Carolina: It gives me much pleasure to call to order in our city the sixty-second session of this society. It is not for me to speak to you any words of welcome, however much I would like to do so, as we have a man especially fitted for this pleasant task, who will address you in a few minutes.

As it has been our custom since the society was organized to invoke Divine guidance in all of our deliberations, we will now ask Dr. Charles W. Byrd, pastor of the West Market Street M. E. Church of this city, to make this invocation.

INVOCATION.

DR. CHARLES W. BYRD, PASTOR WEST MARKET STREET M. E. CHURCH, GREENSBORO.

Almighty God, our merciful heavenly Father, we thank Thee that our spirit inclines us to call upon Thee for help and guidance in all the work to which we are called in this life. We realize how much we need Thee in every difficult task to which we turn our hand, as well as in the smallest task which we must undertake. We realize how difficult, Lord, are the problems that confront us as a body of physicians to whom the health and welfare of our respective communities are committed. We pray Thee, Lord, to give us the guidance of Thy spirit not only in the deliberations of this body, but in our daily life. May the Great Physician be a partner in all our undertakings, and may we learn to rely upon His wisdom, which comes down from above. Help us, O divine Christ, to lean upon Thy strong arm, and to remember that the God of truth and the God of grace must render efficacious all our efforts for the healing of disease, and must clothe us with those peculiar graces which should

always characterize the Christian, and which will enable us to speak words of comfort and sympathy in times of supreme need.

We pray Thee that every officer of this organization may be the object of Thy peculiar care and special visitation. Order all our lives for the honor of Thy name, and multiply the number who constantly call upon Thee for help and guidance. Hear our prayer, and help us to realize the high calling into which we have entered. May we realize that it is a calling not for our own advancement and not for the promotion of our own interests, not for our own self-aggrandizement, but that it is a calling to which God has chosen us for the uplifting of the fallen and the advancement of the race.

We pray that the blessings of God may not only be upon us, but upon every one for whom we should pray. We ask Thee to remember our home folks whom we have left behind, and our patients, who long, perhaps, for our return. We ask Thee to minister to them, and speak the words of comfort and consolation which the still, small voice of Thy Spirit can always speak, and which are more powerful than any words we can speak to those to whom we are called to minister.

We pray that the blessing of God may be upon our country, and upon all those who exercise authority in it, from the Chief Executive of our Nation down to the humblest officers of our cities. We pray Thee that the Chief Executive may be made wise with that wisdom which God alone can impart; and that with a firm, strong hand, yet with a trusting heart, he may do those things which may preserve peace and honor to this Nation and bring prosperity to all our people.

We pray Thee to bless our homes. Make the children Thou hast given us the objects of Thy special care. May the thousands to whom we are called to minister be made children of God and useful members of society, so that the world may be lifted up and made better and be brought closer to the great heart of the Living Father. Hear our prayer, and increase, we beseech Thee, the numbers of those who are willing to lead the life of toil and self-denial which is the lot of the physician. May we never be satisfied with the achievement of any ideal, or with the realization of any present purpose, but may we be constantly forgetting the things behind and reaching forward to those things before us, ever realizing that there is a high mark in this profession. We ask Thee, O God, to consecrate our lives to this work, knowing that in so doing we consecrate them to Thee, and knowing that Thou wilt be pleased. In the hour when we call upon Thee, let us hear the still, small voice of Thy Spirit answering with counsels of wisdom and with blessings of strength and grace. Thou hast promised to honor us, and it is not wrong, we realize, to seek these honors

which come from above. Thou hast promised to remember us in times of trouble, and Thou knowest, Lord, how often we are in circumstances of trouble, and we pray Thee to let us realize the fulfillment of this promise day by day.

Give us a life long enough to do our work, and a peaceful hour in which to lay down its burdens, and then, we pray, may we have thrown open to us the gates of Thy salvation, and see that salvation not only in its processes but in its completion.

All this we ask in the name of Jesus Christ, our Redeemer. Amen.

Dr. J. T. J. Battle: The mayor of our city promised to give you a warm welcome. It gives me pleasure to now present to you Hon. T. J. Murphy, mayor of the city of Greensboro.

ADDRESS OF WELCOME.

T. J. Murphy, Mayor of Greensboro.

Mr. President, Members of the North Carolina Medical Society, Ladies and Gentlemen:

It is with the greatest pleasure and satisfaction that I welcome here today the members of your society at its sixty-second annual meeting, and I venture the opinion that there is no society in existence that has enjoyed a more honorable and useful career, and we are especially proud to claim as our guests men who wear so worthily as you do the ancient and honorable title of Physician. And while Greensboro claims to be one of the healthiest of cities, yet she is truly glad that the doctors have come to see her—not to treat her, however, but to be treated by her, as welcome and honored guests in the house of appreciative friends.

I, therefore, take great pleasure in extending to you, one and all, a warm welcome to the Gate City of North Carolina, and bid you remain as long as you will and enjoy to the fullest her civic hospitality and social pleasures.

I am glad to see so many of you present, and I believe this fact is attributable in some degree to the activity and efficiency of our State, County, and City Health Departments in making the State so healthy that all the doctors can leave home occasionally without the fear that some epidemic or pestilence will break out in their respective communities during their absence. The great strides of progress that the health

movement is making in this State I believe will result in as great benefit to the medical profession as to the general public, in that it will eventually serve to prevent the simple and petty diseases with which your attentions have been so much occupied and give you better opportunities to investigate and solve the really great and far-reaching problems that lie within the realm and reach of your great profession.

If our people had been longer engaged seriously in the work of disease prevention and health promotion, actively led and frankly advised as they are now by your learned profession, who could estimate the far-reaching results and reciprocal benefits arising from such a sensible policy? Why, some of the modern medical and surgical discoveries might have been accredited to our State; we might have claimed something similar to the X-ray or the Twilight Sleep, or perhaps some of our snapping turtles might have furnished a serum that would have been really dangerous to the tubercle germ.

And to stimulate the profession along these lines I believe it would be a fine thing for our State, through your society, to offer valuable money prize or prizes, biennially at least, for the best discovery or invention in medical or surgical research work among the physicians and surgeons of North Carolina. I trust you will pardon this suggestion, and slight digression from the commonly accepted form and tenor of an address of welcome, but I have always considered anything appropriate in such an address, from a discussion of the chilblains and sunburns of the North Pole to the concrete walls and slipping sands of Culebra Cut. And I am glad to feel that we people and you doctors can on occasions meet and talk over matters in easy give-and-take fashion without violating any ethics or arousing any ire, for it is the easiest way to get acquainted and the best way to remain friends.

I want to congratulate your profession upon the great strides of progress it has made during the past quarter of a century all over the civilized world, and especially upon your conduct here in North Carolina, where we have as high-minded, unselfish, and honorable a set of physicians as anywhere on earth. And while your conferences and consultations will be most pleasant and beneficial to you, we trust that you will devote as much time as possible to the recreational and social side of this occasion. We have many and varied attractions here in Greensboro, which I have no doubt will be presented to you by our courteous and ever-thoughtful local physicians.

To begin with, we have one of the best hospitals anywhere; we are also surrounded with many large manufacturing plants and wholesale establishments and banking institutions and some of the strongest life and

fire insurance companies to be found in the South; we also have many denominational and State colleges here, enlightening not a few, but all classes of our State's citizens; and several famous tree and plant nurseries that spread their products all over the Southern States; and several sanitariums of a high order for the treatment of nervous diseases and disorders. We also have, only a few miles away, one of the richest historic spots in America—Guilford Battle Ground—which by reason of its historical importance and beautiful attractions should, and I believe will, become a National park. We have there now just completed the handsomest equestrian statue in the State, which the National Government has appropriated to the honor and memory of General Nathanael Greene. There you will also see many other attractive monuments of granite and bronze, which seem to emphasize the fact that constitutional liberty was won by blood and sacrifice, and if ever abandoned may have to be regained in the same way.

There are many other attractions hereabouts too numerous to mention, and I understand that the local committee of entertainment and others have arranged a series of receptions, etc., where you can meet and mingle with each other and with our people and enjoy the thoroughgoing good fellowship that characterizes North Carolinians here and everywhere; and I hope you may be so pleasantly entertained here that in the future years, wherever you may hold annual meetings, from the sands of Hatteras to the peaks of Cherokee, from the banks of the Dan to the shores of Pee Dee, you will look back to this occasion and to this city and say, with the poetic traveler:

> Where'er I roam,
> Whatever realms to see,
> My soul, untraveled,
> Fondly turns to thee.

A few weeks ago I gave away the only city key our city possessed, to the Shriners; but we shall not miss it now, since they left everything unlocked, anyway. So you doctors can just walk in and take possession, and in the words of Governor Vance in welcoming your society on a similar occasion many years ago, as related to me by one of your members, I will add that Greensboro opens wide its homes and its hearts to you doctors and all we ask of you is that you shall spare our lives.

Dr. J. T. J. Battle: On behalf of the profession of the State, the response to this pleasant and hearty welcome will be given by Dr. Benjamin K. Hays, of Oxford.

RESPONSE TO ADDRESS OF WELCOME.

Dr. Benjamin K. Hays.

It is with peculiar pleasure that the physicians of North Carolina turn their faces toward the capital city—I hope there is no one here from Raleigh—the capital city of Greensboro.

It is not sufficient that she is centrally located, that she is pierced by a network of railroads connecting her with every section of the State, that she is filled with comfortable hotels and hospitable homes, that she is a city of schools and churches and hospitals. Greensboro stands for more than this. For two centuries she has been the home of a brave and hospitable people, and if today Greensboro, with all her beauty and all her glory, were blotted from the face of the earth, the work of her sons in the advancement of civilization would live as long as history is read.

This has been the home of such men as Dr. Deems, who labored in your midst; of Dr. Turner Jones, the Bynums, the Settles, the Greys, the Schencks, and many others who have added luster to the name of the State.

When I was a small child there was going on in my town a series of meetings in the Presbyterian church. I heard the people say that a great preacher was there. I went to hear him and well remember the wonderful impression he made upon my childish mind. That preacher was Jacob Henry Smith of Greensboro. It was in this city that he lived his godly life, working for the betterment of the city and of the State. Here he worked and here he raised a family of sons who have gone forth to fields of usefulness, no longer limited in their sphere by city or State; they have become men of mark in the Nation. Across the water Alphonso Smith has added to the reputation of America as a producer of scholars and men of culture. But wherever these sons have gone and whatever they have found to do, it has been the spirit of the father which has directed their labors, for he was—

> "One who never turned his back, but marched breast forward;
> Never doubted clouds would break;
> Never dreamed, though right were worsted, wrong would triumph;
> Held we fall to rise, are baffled to fight better,
> Sleep to wake."

If it be said that Dr. Smith was a son of Virginia, let me remind you of another Greensboro man. A quarter of a century ago the higher education of woman was impossible in North Carolina. A Carolinian

determined that the stigma of illiteracy should be banished from the State. That worker found in Greensboro a congenial atmosphere and a people willing to hold up his hands. He came here and built up a school the influence of which has been felt throughout the State and the Southland. Today there are a thousand homes in North Carolina where intelligent women draw their children about their knees and teach them the great lessons of life which they themselves learned from Charles McIver.

If still you say that McIver was not a product of Greensboro, I will call to mind another name. Two years ago, in Columbia University, a professor of English read to his class what he declared to be the best short story ever written in America. The story was called "A Municipal Report," and was written by a boy raised in Greensboro and named William Sidney Porter (O. Henry). This man is now regarded as the best short story writer of his time. His wide knowledge of the world, his keen sympathy for all manner of suffering, and his broad humanitarianism endear him to every reader in the English speaking world.

These are some of the men who have gone out from Greensboro and made her name famous.

> For the life of a Porter, of a McIver the death,
> What danger, what censure, what woe would I brave!
> Their lives did not end when they yielded their breath,
> Their glory illumines the gloom of the grave.

Dr. J. T. J. Battle: We have now arrived at the moment when we expect to hear, in our president's address, something of vital importance to the State and to the profession. In this we shall not be disappointed. It gives me pleasure to introduce to you the president of this society, Dr. L. B. McBrayer, of Sanatorium.

PRESIDENT'S ADDRESS.

Dr. L. B. McBrayer.

Mr. Chairman, Members of the Medical Society of the State of North Carolina, Ladies and Gentlemen:

I appear before you this morning to return to you the trust reposed in me one year ago. Its honor is unsullied; we have kept the faith. However, we have not accomplished what ought to have been accomplished nor what we wanted to accomplish. For our shortcomings we crave your forgiveness.

It is common to hear the retiring president speak of the appreciation of the honor conferred upon him—the highest honor in the gift of this Society—and emphasize his appreciation, if possible, by calling to witness the high standing, natural and professional ability, and great accomplishments of the men in our profession whom you have honored in like manner. Let me say that none who have occupied this office in years gone by are more appreciative than the speaker.

We should never forget, however, that honors never fail to bring responsibilities, and we cannot, if we would, accept the one without having placed on us the other. We felt one year ago—and we feel it more keenly today—how undeserving of this high honor, and how little able we were to shoulder the responsibilities of this office; and but for your confidence and support the honor never would have been given to me; but for your cordial support, coöperation and encouragement, the responsibilities would have been too heavy to bear. And may I crave your continued support, coöperation, and encouragement through this session and for all time.

Complete File of Proceedings.—Our secretary, Dr. John A. Ferrell, has been faithful and persistent, and has finally secured a complete set of the transactions of this Society from its organization to date, and has had them bound. In securing this complete set, our thanks are due Dr. Walter C. Murphy, 507 Fourth Street, N. W., Washington, D. C., a former member of this Society and a former secretary, but now resident at the above address, who kindly donated to the Society a complete set of the transactions from the origin of the Society in 1849 up to 1890, excepting volumes for the years 1880, 1883, 1885, 1889, and 1890. The Society had the volumes from 1891 to 1914 inclusive, excepting the year 1898. We would recommend that this complete set of the transactions of this Society be placed in the State Library at Raleigh, and that a paster should be placed on the fly-leaf of each volume indicating the donor, so that any physician in the State or other persons in the State might have access to them, and perhaps for the more important reason that we would be absolutely certain that they would be kept intact and not be lost in transferring from one secretary to another. In fact, your present officers tacitly agreed to this arrangement before this splendid donation of Dr. Murphy's could be available. We trust the Society at this meeting will take whatever action necessary to carry out this suggestion. Dr. C. S. Mangum has also procured almost a complete set for the University Library, and two or three physicians in the State have complete sets, which they prize very highly.

Complete List of the Membership of This Society to Date.—The secretary has also compiled a complete list of the membership of this Society to date. Much of this valuable work was done by Dr. J. Howell Way when he magnified the office of secretary. We would recommend that the incoming secretary be authorized and instructed to go a step further and secure and keep intact a file of all the legal practitioners in North Carolina, and that he furnish a list of the same to the collectors of internal revenue in North Carolina, in order that they might be aided in enforcing the law in regard to the prescribing of narcotics. We would further recommend that the officers of this Society be instructed to cooperate with the collectors of internal revenue in North Carolina in any other way possible in the enforcement of this law. The symposium on narcotics which will be presented at this session should call the attention of the profession, and we trust the people of the State, to the destruction brought to our people by the use of narcotics, and we would recommend that an additional committee of three or five be appointed to cooperate with our Committee on Public Policy and Legislation to bring the matter to the attention of the people of our State, and especially to bring the matter to the attention of the next General Assembly.

State Board of Health.—It is a great pleasure to note the efficiency of our State Board of Health and the efficient and constructive health work it is doing. This Society, and the people of the State as well, will no doubt be pleased to know that North Carolina is beginning to be looked up to by the other Southern States as a State who leads in public health work. The plans of the State Board of Health are well considered and their policies are constructive, and with Dr. W. S. Rankin as executive officer these plans and policies are well carried out. I bespeak for the State Board of Health the continued loyal and hearty coöperation of every member of this Society.

Health Officer.—The health officer is in greater and greater demand throughout the State of North Carolina, and even now some ten or twelve men are devoting their whole time to this work, at a fairly remunerative salary. The demand for first-class health officers in North Carolina will increase rapidly as the days go by; not only in North Carolina, but in every medium-size town and in a large percentage of counties in every State in the Union. The work of health officer, whether city or county, is peculiarly the function of the physician. The sanitary engineer, the public health nurse, cannot now nor can they ever take the place of the physician as health officer. However, if the physicians sit idly by and do not meet the demands, or do not show sufficient interest to place one of their profession where a health officer is needed, the sani-

tary engineer is not to be blamed if he places one of his profession in such place. We delight to honor Colonel Goethals in accomplishing the splendid feat of engineering in the construction of the Panama Canal; but it was not an engineer that discovered the method of transmission of yellow fever and of malaria, without which discovery the building of the Panama Canal would have remained impossible. It is the physician who has made the profession of sanitary engineering possible, and more honor is due Colonel Gorgas and the men who discovered the methods of transmission of yellow fever and malaria than is due Colonel Goethals.

The public health nurse is an important factor in the campaign against disease, just as is the sanitary engineer. The physician in reality makes the nurse. He has at all times and does now and will ever make the nurse, of whatever title, possible; and the nurse who assumes that she knows more than the physician in public health work or in any other kind of work in her profession is making an egregious blunder. The physicians must furnish the health officers of this country. They have never failed to measure up to their opportunity or to their responsibility, and they will not fail in this instance. A few of the best schools have put on a course for health officers, at the completion of which they confer the degree of Doctor of Public Health. It is proper to make mention, in this connection, of the fact that Dr. W. S. Rankin, secretary of our State Board of Health, has outlined a plan for training health officers which in the opinion of those competent to judge will give a physician far better training than can be given in the schools offering the degree of Doctor of Public Health, this training, of course, presupposing a certain amount of knowledge of public health work to begin with.

The Control of Cancer.—The increasing number of deaths from cancer means, more than anything else, that the physicians do not pay that attention to the early lesions that the importance of these early lesions demands. Our knowledge is not sufficient at this time to enable us to speak of the prevention of cancer, but knowing that in the large per cent of cases if the early lesions were properly treated the death rate from cancer would be reduced 50 per cent or more, it is proper to speak of the control of cancer. Until our research workers have given us more information in regard to the cause of cancer, the fight resolves itself into obtaining the coöperation of the physicians in treating the early manifestations of cancer and in educating the people to understand what these early manifestations are and what they mean. It is with pleasure that we note in the last few months that Dr. John Wesley Long has been appointed a member of the American Society for the Control of Cancer, and that through him a good, large committee of surgeons of this State

has been formed into a State committee for the control of cancer. It is hoped that the formation of this committee of surgeons will serve to interest more deeply the surgeons of North Carolina in the prevention of disease. It is apparent, however, that unless this committee correlates itself with the State Board of Health the publicity work necessary to carry out the procedures mentioned above will not be obtained, as this committee will not be able to afford either the time or the expense necessary.

Tuberculosis.—Modesty forbids my saying anything in regard to the fight against tuberculosis that is now joined in North Carolina except to emphasize the fact that in this fight the North Carolina doctor has an important part to play. He is on the picket line and must scent the approach of this arch enemy of our civilization, of our people, when yet in the distance, and sound the alarm. Unless the doctors in the State, acting in their capacity as pickets, report the location of the enemy, we will enter the fight with a heavy handicap.

Early diagnosis of tuberculosis is of equal importance with the early diagnosis of appendicitis, and there is no excuse for a physician in North Carolina, no matter how poorly prepared, failing to make diagnosis in a case of tuberculosis until all the people of average intelligence in the neighborhood have made the diagnosis from the general symptoms.

There are certain clinical symptoms that can be reported by an average nurse or intelligent person in the family or community that point so strongly to tuberculosis that a diagnosis is demanded, at least until it is proven otherwise by an expert diagnostician after careful and painstaking examination; and the people are becoming more and more familiar with these clinical symptoms, just as they are with the clinical symptoms of appendicitis, and are demanding that the doctors shall at least advance as rapidly as they in the diagnostic knowledge of tuberculosis; and the doctor in North Carolina who does not do this will appear to bad advantage among his clientele.

In this connection let me say that tuberculosis is a contagious disease. It has been placed in this category by more than one State Board of Health, and it is a reportable disease under the jurisdiction of every board of health deserving the name. It is, then, just as much the province of the health officer to give expert diagnosis in tuberculosis suspects as it is in suspects of diphtheria, scarlet fever, smallpox, or any other contagious disease. To this end the State Board of Health has provided that any health officer may spend a week or a month or as long as he desires at the State Sanatorium, perfecting himself in the diagnosis of tuberculosis and the hygienic handling of the same, without expense to him.

Conservation of Vision.—The president took the authority to form a section on the conservation of vision for this session. We feel that this is a very important matter in North Carolina at this time. The State has been providing as best it could for the education of the blind in our State, and has done well. The State School for the Blind at Raleigh, under the direction of that able champion of the cause of the blind and splendid superintendent of the school, Mr. John E. Ray, has been turning the blind paupers of our State into self-supporting citizens. The State School for the Blind, then, is an economic institution of far-reaching importance. However, it would seem that when one-third of the blindness in North Carolina can be prevented by the expenditure of two or three cents per head or less, that we are pursuing a very short-sighted, not to say foolish, policy. It would seem that it would be very much better to build a fence along the edge of the precipice to keep people from falling over, rather than maintain an ambulance in the valley below and a State school for the blind. The medical profession, as in all other matters medical, must use their influence and expend their efforts and intelligence to bring about the desired result in this particular instance. I would therefore recommend that this Society form a permanent committee on the conservation of vision. The title would perhaps better be "The Commission of the Medical Society of the State of North Carolina for the Conservation of Vision," this commission to act in conjunction with the State Superintendent of the Blind and his board in conducting an educational campaign throughout the State for the prevention of blindness and for the enforcement of the wholesome laws passed by our last General Assembly, the Secretary of the State Board of Health to be *ex officio* a member of this commission.

Narcotics.—The use of narcotics in our State affects so vitally the mental and physical health of our people that I feel compelled to bring again the matter to your attention. In doing so I feel that I cannot do better than to refer you to the comprehensive and pointed statement on this subject contained in the president's address of Dr. J. M. Parrott last year, found on pages 25 and 26 of the proceedings of 1914, and but for the time required to read it, would embody it as a whole. The resolutions passed at the Winston meeting in 1908 was the first important stand taken by this Society in regard to the use of narcotics, referring in this instance to whiskey. The records of our insane hospitals show that 50 per cent of the patients are there on account of the use of narcotics. We are spending nearly three-quarters of a million dollars every year caring for those we have there, to say nothing of the cost of the buildings and grounds, and there are yet a few hundred insane people in the State who

cannot be admitted for want of room. When it is positively known that we could save $350,000 annually in the maintenance of our insane hospitals by stopping the use of narcotics—whiskey, opium, cocaine, etc.—it would seem that we would do it as an economic proposition. Until we do this we should at least make preparation and treat these habitués before they become insane, and save them to their family, their friends, and the State, and make of them an economic asset instead of a total loss. Again we are maintaining an ambulance service in the valley below at great cost, rather than spend a few dollars to build a fence along the edge of the precipice to keep our people from falling. Again the doctor in North Carolina plays an important rôle. The doctors of North Carolina must work out these problems, and they have much to do with the enforcement of the whiskey and narcotic laws.

These things will be fully discussed in the splendid symposium on Narcotics that forms an important part of the program of this meeting, and for that reason I leave the subject without further comment, except to say that whiskey or opium or cocaine is just as harmful when put up in bottles and labeled

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and sold through advertisements in religious papers as it is when it is labeled "Whiskey" and sold in a barroom, or labeled "Opium," with the skull and crossbones displayed on the wrapper and sold through a drug store. And it is high time that the religious and all other self-respecting newspapers in our State cut themselves loose from the unholy alliance with the patent medicine frauds, by which alliance they are aiding and abetting in the sale of liquor, opium, cocaine, etc., to the people of our State (it is worthy of mention that the denominational paper of the Methodist Church in this State has already severed this alliance), or else they should come out boldly and say that they are opposed to the prohibition law; that they are opposed to restricting the sale of narcotics; and that they are in favor of perpetuating a practice that is destroying increasingly large numbers of our people—mind, body, and soul.

The Last General Assembly and Its Attitude Towards Matters Medical.—It was a great pleasure to note the influence of the medical profession in North Carolina as shown in the last General Assembly. The improvement, or the increase of the stringency of the prohibition laws of the State would never have been considered for a moment had it not been for the action taken by this Society at the session in Raleigh, June, 1914, in regard to the prescribing of alcohol as a therapeutic agent, the said action being perhaps largely a result of the splendid deliverance

of the president, Dr. James M. Parrott, on this subject in his president's address. It was openly stated by the strongest advocates of prohibition measures that they would not vote for any further extension of the prohibition laws as long as whiskey was sold at the drug stores; but as soon as your president and your Committee on Public Policy and Legislation stated the attitude of the State Medical Society these same men were willing to go to any limit in the prohibition of the sale of alcohol in North Carolina.

We desire also to express our appreciation of the similar position taken by and the influence of the North Carolina Pharmaceutical Association in regard to the sale of alcohol by drug stores in North Carolina.

A letter from a gentleman in this State who is a close observer of men and measures stated that our Society had done more toward decreasing the consumption of whiskey in North Carolina than any other organization except the church. And it is perhaps not improper for me to say at this time that this action by our Society has increased largely the esteem and confidence of our people for the medical profession in our State.

May I state also that the nonmedical men in the General Assembly were thoroughly informed in regard to these matters and in regard to public health matters in general. As an evidence of their intelligence in this matter we might call to witness the fact that when the only untoward bill, medical or health, was introduced in the General Assembly providing for opening the sale of opium and its derivatives, the Committee on Health voted unanimously to report the bill unfavorably, and it was killed then and there.

Every bill affecting the medical profession, all considered constructive and progressive, was passed without amendment and without opposition. Among these we might mention the divorcing of the meeting of the Board of Medical Examiners from the meeting of this Society and holding the main meeting annually in the city of Raleigh, at such time as the Board of Examiners may decide, and holding a second meeting during the year if desired, and abolishing the temporary license. It remains to be seen whether or not this law is wise. It may be that it will place additional burdens on the Board of Examiners, who I am quite sure are sufficiently burdened already, and it certainly takes the board meeting and the young doctors who are participating away from the influence of this Society just at a time when the young doctors are entering the profession in our State, and when they should be brought under the wholesome influence and made to feel the importance of allying themselves with the organized profession in our State as represented by

this Society. Let us hope that this is not the beginning of the time when the Board of Medical Examiners shall be completely cut loose from this Society and become a trophy of ordinary politics.

Another important piece of medical legislation was that allowing medical students who have completed the first two years in medicine, at a medical college accredited by our board, to be admitted to examination on the two years work upon the payment of a fee of $7.50 and to have credit for the marks made at his final examination after receiving his degree. There is no real objection to this law, and it should give encouragement to the two-year medical schools in our State, which schools already enjoy an enviable reputation on account of the splendid work they are doing; but it is not supposed that the framers of this law had this in mind.

Every bill save one for the improvement of public health laws that was presented passed without amendment. We might mention the bill to amend the vital statistics law, the bill to allow counties and towns to provide money to maintain patients at the State Sanatorium, a bill incorporating a training school for nurses at the State Sanatorium, a bill requiring the instillation of a 1 per cent solution of silver nitrate into the conjunctival sac of every new-born babe and requiring every midwife or nurse or other person having charge of an infant, noticing any inflammation or reddening of the eyes of said infant, to immediately notify the local health officer or other competent physician of such fact, etc., etc. The only bill that failed was a bill to allow the State Board of Health to inspect convict camps, jails, etc., throughout the State. The appropriations were increased for health work as much as could be expected, perhaps, considering the psychological depression on account of the low price of cotton. The following increases were made: To the executive department of the State Board of Health, the Bureau of Vital Statistics, to the State Laboratory of Hygiene establishing an antitoxin farm, and to the Bureau of Tuberculosis and to the State Sanatorium. The laity, as we call the nonmedical men, must needs look to the medical profession for guidance along all lines having to do with public health. We have felt for some years that the average medical man did not take that interest in public health matters that he might do, and that he might do to his own advancement. It has been frequently remarked in our hearing that the majority of the lay members of the last General Assembly were better informed on these matters than the average physician in the State.

Change Date of Meeting.—The date of our meeting so nearly coincides with the meeting of the American Medical Association that it is impos-

sible for many who would like to to attend both meetings. I therefore recommend that the date of our meeting be changed to such time as this Society may decide upon.

Combined Sections.—It would seem that the section on Medical Jurisprudence and State Medicine was proper nomenclature in its day and generation; but this title is an obsolete phrase today. We take it that the committee had this in mind when it provided for a section on School Hygiene and Rural Sanitation at the last session. We would recommend that the whole thing be combined and the title of the combined section be styled "Public Health and Public Instruction."

Politics versus Scientific Papers.—I have heard frequent criticisms of our Society, covering a period of quite several years, to the effect that we were too much given to politics—of the good medical kind, be it observed, however—and to the exclusion of hearing and discussion of scientific papers. Let me offer two observations on this criticism: First, I have never yet seen any organization, political, religious, civic, social, fraternal, college, high school, medical, legal, commercial, industrial, agricultural, or what not, composed of men or of women or of both, that was free from politics; nor do I believe that any such organization has ever or will ever exist, not even in the much vaunted commission government, which is the newest fad of our democratic form of government. Second, if there are a goodly number of members of this Society who feel that this criticism is just, it is their duty to do two things: First, prepare and bring to this Society a sufficient number of scientific papers to make a program quite to their taste, and be present in person and read their papers and give to the other scientific papers scientific discussion; and, second, to enter into the politics of this Society and make the said politics conform to their views as to quality, quantity, momentum, and all other specifications desired. Accomplishing their purpose in whole or in part, it then becomes their bounden duty, as it has ever been and ever will be, to combine their energy, intellect, and enthusiasm with the other members of this Society to make of it what it is sure to be—in fact, now is—one of the strongest and best State medical societies extant; one of the most powerful State medical societies known, but one which wields that power only for the good of our noble profession and the good of all our people—the brightest star in the galaxy.

Social Service.—There is no phase of social service with which the doctor is not prominently connected. It was noticeable at the recent session of the Southern Sociological Congress that every subject presented was based upon and solvable by proper health conditions. It is worthy of note that the next session of this Congress will have for its

object pointing out the duties of all organized bodies of people, including the church, in this campaign for health. The various organizations for social service are simply the announcement of the fact that a goodly number of our people are answering the question that has been reverberating down the halls of time since the time of Cain and Abel, "Am I my brother's keeper?" They are anxious to answer this question with their time and their money; but it devolves upon our profession, upon you and me, to point the way.

Coöperation.—Coöperation, which is a synonym for organization, is the most important factor in our present-day civilization. It is the thing that makes possible our postal system and the small amount of postage required to carry our letters anywhere in the world. It is the foundation of the success of the Rockefellers, the Vanderbilts, the Dukes, and the Cones. It reaches its highest development in Germany's military organization, making it possible for her to defy the nations of the world and get away with it. It reaches its lowest development in some of the county medical societies in North Carolina. In many of the counties in North Carolina the doctors make no effort—in fact, not even a pretense—at keeping up a medical organization, which we speak of as a county medical society, only perhaps in name. In these good days of ours all kinds and classes of people have their organizations; the captains of industry and their laborers, the merchants and their clerks, the laundrymen, the farmers, the manufacturers, the contractors, the carpenters, the painters, brickmasons, and hod-carriers, the railroad magnates, their conductors, engineers, firemen, flagmen, section foremen, and laborers, and on and on through every activity of life from the top to the bottom. These people profit by their organizations. Then why should not we? But the time is long since when argument were needed to show the importance, the need, the value of the county medical society in North Carolina. If it were, I would refer you to that comprehensive, logical, learned, ornate, eloquent discussion of this subject by Dr. E. C. Register in his president's address before the Tri-State Medical Association this year, and to the address of my immediate predecessor, Dr. J. M. Parrott, than which there is none more able and none more constructive. But the deplorable fact remains that a large percentage of the counties of this State have a medical society in name only and not in fact. There are notable exceptions, however. Perhaps there is no better medical society in this or any other State than the Buncombe County Medical Society. It excels in everything that a county medical society should be in North Carolina. Mecklenburg County Medical Society is doing splendid work. In addition to their regular society

work, they arranged a meeting this year at which Dr. Lewellyn F. Barker of Baltimore was their guest, and, true to the Mecklenburg spirit, they allowed any physician who would, in this and adjoining States, to share their pleasure with them. This society, too, is magnifying the district meetings by arranging once a year a clinical session for their district medical society. As an example of what a small county medical society can do, I would present to you the work now being done by the Henderson-Polk Medical Society. At this time they are meeting weekly, perhaps the only county medical society in the State that is holding weekly meetings. The Buncombe County Medical Society, when your president had the honor to serve as its president, changed from monthly to weekly meetings, which was later changed to semimonthly meetings and which so continues. And the Henderson-Polk Society at these weekly meetings has for the principal feature "A Case Study." The complete history of four cases is sent to them each week by Dr. Cabot of Boston. They take up the family history, personal history, physical examination, symptoms, laboratory findings, in order. From these each member makes a diagnosis, which latter is compared with the diagnosis of the hospital, of Dr. Cabot, and lastly with the post-mortem findings. A discussion and criticism of the treatment would close the case. There is no county medical society in this State too small to carry out such a splendid scheme of work as this.

Our district medical societies can be made of great value if the membership in each district so wills. I have already referred to the splendid clinical meetings of the Seventh District at Charlotte. As an example of what a district medical society ought to be, the Fourth District Medical Society is a conspicuous example. You all know the executive ability and leadership of the one man who more than any other has made this splendid district medical society possible. The Fifth District is well organized, has two interesting meetings each year, one of these being held at the Sanatorium as guests of the institution, where a clinic in some special feature of tuberculosis work is given. At its winter meeting this year this society had as its guest Dr. W. L. Rodman, president of the American Medical Association. What these societies are doing others can do. Some of the other societies are doing good work; others are doing little, and a few making no attempt to hold meetings.

The greatest opportunity the medical profession of North Carolina has ever had is now within its grasp. With the splendid foundations, deep and wide and lasting, for public health work laid by the lamented Wood and O'Hagan, broadened and deepened and strengthened by our own Thomas and Lewis, and now builded upon yet by Lewis and by

Way and Laughinghouse, Wood the younger, and the others; with Rankin for the architect and contractor, who shall say that North Carolina shall not sit at the head of the table in her public health work—that she will not soon be the vanguard in the fight against unnecessary disease and needless death? In fact, she now is.

With this splendid beginning—for it is only a beginning—fostered by the intelligent, conscientious statesmen who form our general assemblies, and given the whole-hearted support of this Medical Society individually and collectively, and the coöperation of the people of our State, the kernel, the acorn planted years ago will rear its stately head high toward the heavens, a majestic oak, and its strong branches will extend from east to west and from north to south and give shelter and protection from communicable diseases to every citizen, every man, woman, and child who has the honor to live within the borders of our grand old State, and likewise to the stranger that is within our gates.

The killing of 1,500 people in North Carolina every year by typhoid fever or in three months by tuberculosis is not so spectacular as the sinking of the Titanic by an iceberg or the Lusitania by a German submarine; but they are just as dead when they die in North Carolina from preventable disease as are those who went down to a watery grave in mid-ocean on these ill-fated vessels, e'en though death comes like a thief in the night, without beating of drums or waving of flags.

Saving a human life by the prevention of disease is not so spectacular as opening the abdomen and relieving a volvulus or removing a gangrenous appendix or doing a Cæsarean section, but the life saved is just as precious. And the opportunity for saving human lives by the prevention of disease is many thousand times greater than by the surgeon's knife.

What is a miracle? In ancient times, in the times of the Bible, it was healing the leper, making the lame to walk, restoring sight to the blind, raising the dead. In modern times, in the times of Jenner and Koch and Behring and Flexner and Lazear and Gorgas and Rankin and the others, it is curing and preventing tuberculosis, including tuberculous disease of the bones and joints, which is the leprosy of our day; it is curing and preventing poliomyelitis and cerebrospinal meningitis; it is preventing blindness in infants caused by the gonococcus; it is preventing the death of thousands of helpless, innocent children from diphtheria; it is the prevention of thousands of deaths from typhoid; it is the prevention of hundreds of thousands of deaths from tuberculosis.

It is said that in the career of John Kepler, the great astronomer, when he discovered the laws of planetary motion, he was found in his

study, exulting in his triumph, and with tears of joy streaming down his face, he was heard to exclaim: "I think Thy thoughts after Thee, O God!" And when I think of these modern miracles that we are able to perform, I feel like paraphrasing the immortal words of John Kepler and crying: "I do Thy works after Thee, O God!"

Dr. C. O'H. Laughinghouse: I move that this splendid message of our president be referred to a special committee for consideration.

Dr. J. M. Parrott: I second Dr. Laughinghouse's motion with great pleasure, and take the liberty of suggesting that it be amended by naming Dr. Laughinghouse, Dr. J. Howell Way, and Dr. K. P. B. Bonner as the committee.

This motion was carried as amended.

CORRESPONDENCE RELATIVE TO FILE OF TRANSACTIONS.

Washington, D. C., June 11, 1915.

Dr. L. B. McBrayer, *President,*
The Medical Society of the State of North Carolina,
Sanatorium, N. C.

Dear Dr. McBrayer:—The records of your society have been sent to Greensboro for presentation next week. Credit is due Dr. Ferrell.

It would give me distinct pleasure to be present. I recall a meeting of the society in that beautiful city. I was a guest of your former president, Dr. James K. Hall; met a beautiful daughter of Judge R. P. Dick; and young at the time, was designated among the delegates to represent you in the American Medical Association.

I would have been glad, also, to have some of the Washington physicians visit with me, to observe the character of the very superior work which your recent transactions show is being done by North Carolina doctors.

You meet in Greensboro to elevate medical science; infuse medical enthusiasm; build up medical literature; awaken interest in better sanitation; form new and renew old friendships; and, above all, for the prevention of preventable diseases. And with these laudable objects in view, well may your mission and your presence pave your cordial welcome to the homes and hearts of the best citizenship in Greensboro, who feel an interest in the medical welfare of the State or whose bosoms swell with the generous emotions of social enjoyment and State pride.

I recall Drs. Satchwell and Summerell, Thomas and Tayloe, Winborne and Wood, Pittman and Patterson, Bellamy and Battle, O'Hagan and Hines, Payne and Pierce, Ashe and Alexander, Johnson and Jones, Whitehead and Faison, the Haywoods and Hills, McKees and Duffys, Dr. James K. Hall and others of the State's foremost physicians, patriots, philanthropists, and philosophers who "have passed to silence and pathetic dust."

The labor of love in a simple recitation of the achievements of the medical men of the Old North State would be a pleasing task. But should dramatic art, rhetorical pyrotechnics, or literary feast be anticipated, to my own embarrassment would be added your disappointment.

Your society received my sincere devotion while in the State; and since my exile I have watched its progress with the solicitude of real friendship, rejoicing in its success and lamenting its embarrassments as I would the triumphs and vexations of my own household.

In closing, I cherish the hope that I may have occasion to renew old friendships that will awaken old associations and bring back to memory the halcyon days in the years of long ago. And may these words be accepted as proof that their author does, and will forever, entertain for the officers and each individual member of the Medical Society of the State of North Carolina feelings of the deepest interest and affection.

Respectfully, WALTER C. MURPHY.

SANATORIUM, N. C., June 12, 1915.

DR. WALTER C. MURPHY,
507 Fourth Street, N. W.,
Washington, D. C.

MY DEAR DOCTOR:—On behalf of the Medical Society of the State of North Carolina allow me to express to you my appreciation of your letter of June 11th and to express the hope that, while you are unable to attend this meeting, as I would like to have had you do, you may in the near future be able to attend some of our sessions and deliver before our society the address which I happen to know you are preparing on the "History of Medicine in North Carolina."

It seems to me at this moment that nothing could be more interesting to the medical profession in North Carolina than an address on this subject, especially when we take into consideration that the address will be prepared and delivered by a son of North Carolina, one who has always been interested in the attainments of our profession; one who has set up our ideals for us and then helped us to attain them.

May I also again be permitted to express my appreciation of your liberality and generosity in the donation of the set of Transactions of the State Medical Society up to 1890.

With assurances of sincerest regards and high personal esteem, I beg to remain, my dear doctor, Fraternally yours,

L. B. MCBRAYER,
President.

REPORT OF COMMITTEE ON ARRANGEMENTS AND RECEPTION COMMITTEE.

DR. J. T. J. BATTLE, chairman: The Committee on Arrangements and the Reception Committee beg leave to make the following report:

The Lodge of Elks, No. 602, cordially invites you to use their lodge at any time.

We have an invitation to call at the Merchants' and Manufacturers' Club, in the Dixie Building, where "the latch-string hangs on the outside." There is also an invitation from the Country Club, where the golf links will be open to members of the society, and the house and café are at your disposal.

The manager of the Masonic Home will be glad to have you come at any time and go over the institution.

The button to which every doctor is entitled will give you all the drinks you desire, at any drug store in the city, provided your wants are not too varied.

This (Tuesday) afternoon, from 5 to 6, all are invited to the Southern Life and Trust Company's offices, to attend an informal reception given by the Southern Life and Trust Company, complimentary to the society.

This evening, after the evening session is adjourned, we are invited to a floating reception at the home of Dr. J. W. Long. Dr. and Mrs. Long will be glad to see all the members from 10 to 12 o'clock.

At 4:30 tomorrow afternoon we are expected to leave this building and go to the State Normal College in cars which will be provided for the purpose. After an inspection of the grounds and a visit to the dairy, the infirmary, the kitchen, and other points of interest, we will have luncheon there, and after that a rare treat in the form of an entertainment. After this entertainment, we will have our regular evening session in the auditorium, where the annual oration and essay will be given.

If any members of the society wish to see the largest cotton mill in the world making one line of goods, we shall be glad to take them through the great White Oak Mills, just outside the city.

We have also secured films along health lines which the moving picture theaters have kindly consented to use during the convention, and are now running.

The State Board of Health thought very wisely that this week would be a very suitable time to have their exhibit here; so the North Carolina exhibit, together with the South Carolina, Georgia, and Jacksonville exhibits, are on display in the rooms of the Chamber of Commerce, a most creditable display. All are invited to visit it.

Respectfully submitted, by the Committee on Arrangements.

It gives me pleasure at this time to hand over the gavel to our president, Dr. L. B. McBrayer.

The following resolution was submitted by Dr. J. M. Parrott, and, upon motion of Dr. Cyrus Thompson, was adopted by the society:

Whereas the Medical Society of the State of North Carolina has learned that the Daughters of the Confederacy are making an effort to raise funds for the erection of a monument to the late Samuel Preston Moore, Surgeon-General of the Confederate States Army; and whereas, this society heartily indorses this movement: Therefore, be it

Resolved, That the attention of the medical profession of North Carolina be called to the worthiness of this object; and

Resolved, second, That the physicians throughout the State be urged to contribute as liberally as possible to the consummation of the same; and

Resolved, third, That this resolution be given the press of the State for the information of physicians, and that all contributions be sent our secretary, who is hereby instructed to receive and forward the same to the proper authority.

Upon motion of Dr. J. M. Parrott, amended by the president, it was voted that the courtesies of the floor be extended to Dr. R. L. Payne of Norfolk, Va., Mr. John E. Ray of Raleigh, Dr. J. M. Wainwright of Scranton, Pa., and Dr. Frederic E. Sondern of New York City.

SCIENTIFIC PAPERS.

SECTION ON PHYSIOLOGY AND CHEMISTRY.

SECTION ON MEDICAL JURISPRUDENCE AND STATE MEDICINE.

SYMPOSIUM ON NARCOTICS.

SECTION ON MATERIA MEDICA AND THERAPEUTICS.

SECTION ON SURGERY.

SYMPOSIUM ON CANCER.

SECTION ON ANATOMY.

SECTION ON PATHOLOGY AND BACTERIOLOGY.

SECTION ON OBSTETRICS.

SECTION ON GYNECOLOGY.

SECTION ON PEDIATRICS.

SECTION ON PRACTICE OF MEDICINE.

SECTION ON CONSERVATION OF VISION.

SECTION ON HYGIENE, SANITATION, AND PREVENTIVE MEDICINE.

PHYSIOLOGY AND CHEMISTRY.

SOME PHYSIOLOGIC AND BIO-CHEMIC OBSERVATIONS ON MILK.

William Turner Carstarphen, A.B., M.D., Professor of Physiolcgy, Wake Forest School of Medicine.

The man of business knows full well—at times too well—the importance of stock-taking: of ascertaining exactly how he stands. To neglect this precaution often means disaster.

As in business, so in science, it is well to have a periodic stock-taking. Scientific facts accumulate rapidly. They give rise with equal rapidity to the formation of many theories. While they may be wonderfully enticing, yet we are apt to pass from theory to theory without assuring ourselves that the foundation on which we are building is secure.

Bearing this statement in mind, I beg to present some facts as well as theories about an already much discussed subject. Some of these facts and theories, though ancient, have retained their interest until now; and some of them, I trust, will at least appear in a new garb.

Milk, while considered the most satisfactory individual food material furnished us by nature, may become a veritable Dr. Jekyll and Mr. Hyde in the world of the nutrients—that is, if we do not keep pace with the physiologic and bio-chemic advance in the study and investigation of this specific secretory product of the mammary glands.

Milk is a natural emulsion, consisting of a plasma in which are suspended the fat globules. It contains the three nutrients, protein, fat, and carbohydrates, and inorganic salts in such proportion as to render it an acceptable food. The globules of fat are composed of olein, palmatin, stearin, and butyrin. The protein constituents are in colloid solution, caseinogen being an unstable colloid, while lact-albumen is a stable one. The carbohydrates are in crystalloid solution as well as the inorganic salts.[1] Recently Jones[2] has reported that not only the carbohydrate lactose is normally present, but that there is a hexose sugar in sterile milk. He presents both bacteriological and chemical evidence to show that milk normally contains a substance reacting like dextrose. Besides these constituents, there are traces of lecithin, cholestrol, urea, creatin, creatinine, and the tri-glycerides of caproic, lauric, and myristic acids.[3] Citric acid is also present in minute traces in fresh milk, though it is apt to separate out in an insoluble form from condensed milk.

In this connection Langdon Brown[4] noted the frequency of thrombosis in typhoid cases in the South African War. Condensed milk had been used almost exclusively in feeding these cases. About 6 per cent of all cases were affected with thrombosis—a rather high percentage; in fact, about double the normal number. He is of the opinion that this increase in thrombosis was largely due to the general use of condensed milk with its absence of citric acid, or rather its separation into an insoluble form. He thinks that as fresh milk contains some citric acid, it acts as an antidote to the large amount of soluble calcium salts in cow's milk.

Lyle[5] also maintains the possibility of a milk diet predisposing to thrombosis by virtue of the large amount of soluble calcium salts which it contains. If this be true, in such diseases as typhoid and hæmatemesis, thrombosis could be diminished by allowing a more liberal diet and not adhering to an exclusive milk diet.

It must be remembered that citric acid is present in fresh milk only in minute traces, so that if an exclusive milk diet is insisted upon this difficulty may be avoided by the addition of citrate of soda to the milk. According to Martin,[6] citrate of soda acts by forming a double salt with calcium, which is available neither for the curdling of milk nor for the clotting of blood.

The possible inimical rôle of calcium in the production of harmful sequelæ in typhoid leads me naturally to a discussion of the inorganic constituents of milks. It will not be necessary in this paper to enter into any lengthy discussion of all the inorganic salts entering into the composition of milk. Milk, however, as a standard for determining all the requirements of the inorganic foods in man is an ideal one; for we are quite sure that milk contains in just the proper proportions all the inorganic salts necessary for the development of the growing individual.

Special interest has recently been taken in the rôle of calcium in the body generally. So I shall select this one of the inorganic salts of milk because of its general interest as well as for its particular action in the mechanism of milk curdling, the clotting of blood and its action on the heart. Certainly it is no inert substance, but is essential to the animal organism, all of its activities pointing to an active function in metabolism. According to Voit it is excreted in the urine and lost in small amounts by the bowel. He estimates about 0.15 to 0.16 gram lost in this way per day. Hence we see at once the necessity of replacing this important substance.

A rough estimate may be gained of the relation between the composition of the inorganic salts of milk and that of the suckling by making

an analysis of the ash of both. In the case of calcium as an important and representative one of the group, it is found that 100 parts by weight of ash contain, in grams—

Calcium	Rabbit 14 days old, 35.02	Rabbit's milk, 35.65	Rabbit's blood, 0.81	Rabbit's serum, 1.42
Calcium	Dog few hours old, 29.5	Dog's milk, 27.2	Dog's blood, 0.9	Dog's serum, 2.1
Calcium	Guinea-pig, new-born, 32.21	Guinea-pig's milk, 31.1		
Calcium	Infant, 36.1	Milk, 16.4		
Calcium	Human fœtus, 40.48	Human milk, 14.76		

It will be noted from the foregoing data that there is a striking similarity in the amount of calcium in the young animal and that of the milk, except in the case of human beings. It appears that the more rapid the growth of the animal the more nearly similar will be the result of the two analyses.

It is also of interest here to note, with reference to calcium, the wide difference in composition of the milk and the substances from which they are formed, that is, blood and plasma. This leaves us to infer that the mammary gland, in its secretive mechanism, has the power of selection.

A question of much interest to us now is, Does the infant, after it is weaned, receive an adequate supply of the inorganic foods? Taking calcium as an example, it is found present in most of our ordinary foods in the following amounts.

The table[7] below gives the amount of lime present. The values refer to 100 grams of substance dried at 120 degrees C., with the lime content in milligrams.

Sugar	0	Dates	108
Honey	7	White egg	130
Beef	29	Peas	137
White bread	46	Plums	166
Rye	62	Huckleberries	196
Apples	66	Human milk	243
Graham bread	77	Orange	575
Pears	95	Cabbage	717
Potatoes	100	Strawberries	873
Rice	103	Cow's milk	1510

This table shows that it is necessary to understand the lime requirements of an infant. It can be seen that most of our foods are deficient

in lime as compared with milk. A child six months old requires about 1 liter of milk daily; this contains about .5 gram of lime.[8]

The lack of lime salts has often been assigned as a cause of rickets, and it has been recognized that the disease is more frequent when mother's milk is replaced by some other form of nourishment. Also deficiency of lime in the food affects the infant more than the adult. This is natural, since the former requires more lime for the growth of bone. Some very interesting studies by Weiser on deficient calcium diet in animals have recently been published. He points out that a ration poor in calcium shows decided changes in growth, with undersize, underweight, failure of appetite, and general nutritive decline. That the bones, too, are likely to be thin, fragile, pliable, and deformed. One conspicuous fact brought out by his experiments was that there was quite an amount of the alkalies, sodium and potassium, in the bones poor in lime. Magnesium, which was heretofore believed to replace the lime, was not very plentiful. The deviations in the bones from the normal showed least in the skull and were most marked in the ribs and spinal vertebræ.

It might be expected from the foregoing that calcium salts would benefit rickety children. Apparently such is not the case. There is plenty of lime in the blood of children with rickets, but for some cause the power of taking it from the blood and depositing it in the bones is diminished. It looks as if lime starvation is merely an imitation of rickets; for the bone cells, though still ready to deposit calcium, cannot obtain it.

Very little is still known of the combination of lime with the ordinary foods. An explanation of the way lime is present in milk or combined in milk will shed some light on this question. It appears that lime is in some way loosely combined with the proteins of milk or dissolved in it in the form of an inorganic salt.[9] Bunge has shown that it is not present in any stable combination, though it is not definitely known whether some other organic substance in the milk may not serve to keep the calcium in solution in the presence of phosphoric acid.

In this connection Boswerth[10] finds as the probable arrangement of the constituents of human milk of average composition the following: Fat, 3.30%; milk sugar, 6.50%; protein combined with calcium, 1.50%; calcium chloride, 0.059%; monopotassium phosphate (KH_2PO_4), 0.069%; sodium citrate ($Na_3C_6H_5O_7$), 0.055%; potassium citrate ($K_3C_6H_5O_7$), 0.103%, and monomagnesium phosphate ($MgH_4P_2O_8$), 0.027%. It has been observed by L. Vaudin[11] that citric acid in milk is proportional to the lime contents.

This view of calcium being in combination with protein of milk has clinical support.[12] The pediatrist in the treatment of infants suffering from rickets urges as a prime consideration the administration of a sufficient amount of proteins in the dietary.

It is probable that too much importance has been attached to the fat, protein, and carbohydrate content of foods used as a substitute for mother's milk. Nor can such a food be judged alone by its caloric value. From our present knowledge of metabolism and food values, it should be pointed out that a mistake is being made unless equal attention is being given to the amount, as well as the chemic combination of the inorganic salts in such substitute feeding.

We must constantly bear in mind that human beings and animals as well, under certain conditions, as in growth, starvation, pregnancy, and lactation, each have their peculiar drain upon the inorganic nutrients. More publicity and investigation should be given to this subject, especially the influence of lactation upon calcium requirements.

Steinback and Hart,[13] in an investigation of this subject on animals, point out that during lactation there is a drain on the skeletal lime supply when there is an insufficient calcium assimilation. So during the entire period of lactation the dietary should contain a liberal supply of lime. When we recall that most of our popular human food, such as bread and meat, are wanting in this important constituent, no astonishment will be shown at an unusual drain on the maternal lime supply during lactation. It is yet to be announced just where the limit of safety is in our ordinary dietary. Biologic investigation must make it clear how foods should be adjusted to meet the needs of the human organisms.

The acid and alkaline phosphates give to milk its characteristic reaction. That is, milk is said to be amphoteric; in carnivora, however, fresh milk gives an acid reaction, but in most mammals the reaction is alkaline, or more frequently amphoteric. These salts vary considerably in different animals as well as at different stages of lactation.[14]

It is of interest here to note some recent studies by Clark[15] on the reaction of cow's milk. Ordinarily, to determine the reaction of milk, the alkaline constituent is estimated by titration with decinormal sulphuric acid, with blue lacmoid as an indicator and the acid constituent with decinormal soda, with phenolphthalein as an indicator.[16] Clark points out that such an index is of no value except to show the capacity of milk to "neutralize" the added acid or alkali. He emphasizes the fact that a true reaction can only be determined in terms of hydrogen (or hydoxyl) ion concentration by electrometric methods. By this method

an exact departure from the reaction of normal breast milk can be obtained where the ordinary practice of adding certain alkalies in the process of modifying cow's milk is adopted. Such alkalies are chiefly lime water. Bicarbonate of soda and milk of magnesia are added "to correct the high acidity of cow's milk" and to prevent the formation of a tough curd in the stomach.

Clark shows by his method that the addition of alkalies for the purpose of neutralizing "the high acidity of cow's milk" is based upon the wrong principle. He finds a normal average hydrogen-ion concentration of human breast milk lies between 1.07 and .60 x 10^{-7}, about the same as of pure water at 30 degrees C. The introduction of 5% lime water has a marked effect in distinctly lowering the reaction below that of normal human milk. The average value obtained with 5% lime water used as a dilution was 4.3 x 10^{-8}. As Clark intimates, in modifying cow's milk for infant feeding it would not be wise to allow the reaction to depart from the normal hydrogen-ion concentration, 1.07 and .60 x 10^{-7}.

Not only is this fact brought out in this accurate determination of the reaction of milk, but two other vital and important factors, which, if true, would condemn the use of such alkalies as lime water, bicarbonate of soda, and especially milk of magnesia. Not only is this procedure unnecessary, but it is one which involves, by reason of the presence of these alkalies, an inhibitory action of both the proteolytic and lypolytic action of the gastric juice upon milk.

If the use of alkalies is followed by the above mentioned facts, digestive disorders may be initiated, resulting in slight or even serious intestinal disturbances. Though such a disturbance may be at first slight, we cannot underestimate the damage that may occur. For even a slight disorder of gastric digestion is often marked by a rapid and fatal change in the bacterial flora of the intestines.

We must recall, in this connection, that there are two antagonistic bacterial processes occurring in the human intestines—fermentation and putrefaction. In mother's milk the fermentative processes predominate, while in cow's milk putrefactive changes have the ascendency. So, in the breast-fed infant the former process holds true. Now, if the addition of alkalies to cow's milk further favors a tendency to putrefactive changes, we should certainly heed a timely admonition of Clark. He says that the addition of alkalies to modified milk is criticised because of its probable influence in displacing from the intestines a normal bacterial fermentation and replacing it with those proteolytic or "putrefactive processes which are responsible for many of the digestive disorders of infancy."

The effect of boiling milk is a much discussed question. Clinical evidence does not always agree with laboratory and animal experiments. The effect of heating milk to or near the boiling point is said to lose its antiscorbutic properties, a change in its natural flavor and the formation of a scum on the surface. If this scum is removed it is rapidly renewed. Its formation is due probably to coagulation of the lact-albumen, which carries to the surface some caseinogen and fat.[17] While there are evident disadvantages in boiling milk, yet there are two well recognized advantages: (1) All micro-organisms are destroyed; (2) the gastric juice, by virtue of its pepsin or rennin, causes a flocculent and not a bulky precipitate. The explanation of this is that by boiling a part of the dissolved calcium salt is precipitated as a tricalcium phosphate.[18]

A criticism of the first advantage accruing from the boiling of milk is that there are ordinarily three general groups of bacteria found in milk:[19]

(1) The ærobic nonsporulating organisms, the most abundant of which are the lactic acid bacteria.

(2) The ærobic spore-bearing.

(3) The anærobes.

In raw milk the first group predominates, and as the milk ages this group causes it to sour and clot. This may be looked upon as a desirable change in milk, as the bacteria involved are nonpathogenic and may be beneficial when taken into the alimentary tract. One of the reasons for this is that this change which has occurred in the milk resembles very closely that change which takes place in the human intestine.

Another benefit derived from the first group is that in multiplying they may almost completely inhibit the ærobic and anærobic spore-bearing organisms present.

Boiling or heating milk affects the various groups in different ways. At 60 degrees C. the lactic acid bacteria are destroyed, affording an opportunity now for the development of the other group, and as these groups develop gaseous putrefactive changes occur in the milk. At 85 degrees C. the first group—the lactic acid group—are entirely destroyed. The ærobic spore-bearing organisms now appear in great profusion, converting the curd produced by other organisms into a slimy liquid which gives the disagreeable odor of putrefaction. This change is undesirable, as the spores which cause it will survive even on ice for a long time. It appears that to completely destroy these spores milk will have to be subjected to the action of steam under pressure.

From these facts we are warned that there is a danger zone in heating milk, ranging from 65 degrees to 85 degrees C. Between these figures it

will not clot normally, and undesirable changes take place as described above. Hence it appears from investigations of Ford and Pryor,[20] if such antagonism exists in milk between the lactic acid group and the spore-bearing ærobes and anærobes, that a similar antagonism may be found in the intestinal tract of man. If such is the case, the use of lactic acid bacteria in intestinal derangements, due to the growth of spore-bearing bacteria, is advisable, and the use of milk, in which the lactic acid bacteria have been destroyed, without, at the same time, destroying the spore-bearing bacteria, would seem to be contra-indicated.

The safest milk, when not sure of uncontamination with pathogenic organisms, is milk that has been boiled from ten minutes to one-half hour and then preserved on ice. Also, all heated or boiled milk should invariably be kept on ice, since heated milk is more apt to be decomposed than raw milk.

In any sort of a discussion of milk we must keep constantly before us the importance of the metallic salts, in their physiologic functions as well as in certain pathologic conditions. The production of thrombosis has already been mentioned, and other phenomena, such as the retention of sodium chloride, with the production of œdema, the part iron plays in chlorosis, and many other abnormal conditions are now thought to be due to a deficiency of one or more of these salts. Recently the etiology of chilblain, angio-neurotic œdema, urticaria, physiological albuminuria, and certain forms of headache have been explained upon this basis.

Dogs fed on an ash-free diet of fats, carbohydrates, and meats die in twenty-six to thirty-six days. Mice die in twenty to thirty days if fed on the organic but ash-free constituents together with the extracted salts of cow's milk. Hence Lunin in conducting his experiments on mice concluded that the inorganic salts must be provided in organic combinations as found in vegetable and animal food.

Following these experiments, it has further been determined that there are certain organic substances present in milk and other foodstuffs in minute quantities that have no doubt heretofore been overlooked. It appears that they play a most important part both in growth and in disease. These organic substances would have been removed in the experiments mentioned above on dogs and mice. To these important organic substances the name vitamines has been given. One has been isolated in the outer layer of rice and given the formula $Cl_7H_2ON_2O_7$ by Funk.[21] He has also found these bodies in milk, yeast, ox-brain, and lime juice. A sterilization or boiling of milk appears to destroy the vitamine, so that it probably explains the production of scurvy in infants fed entirely on such milk. While some of the vitamines are destroyed by heat, as in

milk and in dried fruit and vegetables, lime juice appears to be an exception. It does not lose its activity as an anti-scorbutic, after having been boiled an hour. There are probably similar substances in meat extracts. A knowledge of this may cause us to revise our estimate of the value of bouillon and beef tea. Not because of their nutritional value, for it is negligible, but for its well known action as a stimulant to gastric secretion and the probable fact of its containing vitamines.

It appears, then, that the inorganic salts are necessary to maintain life; that in all probability they are best absorbed and utilized when in organic combination with foods; that there is a striking difference between the ash content of human and cow's milk, which should have weight in the artificial feeding of infants; that certain pathologic conditions arise when the organism is deprived of certain inorganic salts, that is, they are not absorbed even though found in abundance in the food; that in certain other pathologic conditions salts are actually withdrawn from the body to such an extent as to impoverish the organisms and produce grave disturbances of nutrition.[22] Also, that these salts are present in human milk in sufficient quantity and in correct proportion for the needs of the nursing infant. This fact holds true with the exception of iron.

In the case of iron we are struck with the relatively low iron content of milk as compared with the content of the other salts. This same comparison holds true with many of our foodstuffs. Bunge in his analysis of iron makes this clear. The values refer to 100 grams of substance with iron in milligrams:

Sugar	0	Rye	3.7 to 4.9
Egg albumen	0	Cabbage	4.5
Honey	1.2	Potatoes	6.4
Rice	1 to 2.5	Beans	8.3
Oranges	1.5	Beef	16.9
White bread	1.5	Asparagus	20.0
Apples	1.9	Egg yolk	10 to 24
Cow's milk	2.3 to 3.1	Spinach	33 to 39
Human milk	2.3	Hemoglobin	340

Though human as well as other milk is poor in iron, yet it appears that the mother supplies its young with a sufficient amount of iron. This supply, however, is not furnished in the milk, but by way of the placenta. This is corroborated by many analyses of animals and human embryos. It is found in both that the iron content is greatest at birth and decreases steadily until it reaches its minimum at the end of the period of lactation. Why such a mechanism is preferred, rather than have a sufficient

amount of iron secreted in the milk, is not clear. Yet an attempt to explain such an occurrence would in all probability throw some light on the absorption of iron in general.

Hemoglobin contains .4% of iron, yet it is estimated that the entire blood of an average man contains only 2.5 grains of iron.[23] So from this we must understand that while hemoglobin is comparatively rich in iron, it is nevertheless an extremely precious metal in the body. Indeed, so scarce is this metal that nature conserves it in the organisms; for when hemoglobin is destroyed in the liver the iron contained in the hemoglobin is not excreted, but retained by the liver cells, and in all probability used over again, in the red bone marrow, to help form fresh hemoglobin for new red blood corpuscles. The pigments of bile, urine, and feces contain no iron. It is to be remembered in this connection that the capacity for hemoglobin to hold and convey the respiratory oxygen depends directly upon the percentage of iron present.

This scarcity of iron in the body as well as in most foods, and the uncertainty of its absorption through the alimentary canal, may be one of the reasons for the economical handling of this element directly through the placenta.

We must not lose sight of the import of iron. Besides, it should be noted that the iron stored in the infant at first in sufficient quantity decreases gradually from birth, and that towards the end of lactation the store of iron in the infant plus the iron in the milk is insufficient for the formation of the required amount of hemoglobin. This has been shown to be true by excluding all foods except milk at the end of lactation, when the infants invariably develop anemia. When foods rich in iron are now administered to the anemic infant, the hemoglobin values increase rapidly.

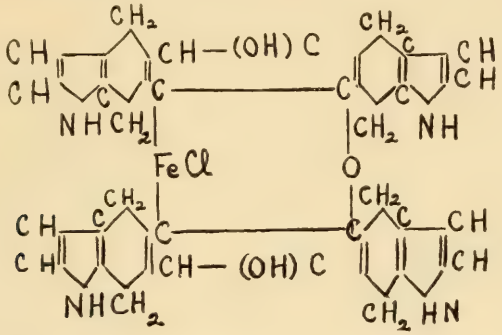
So it appears very undesirable that the child should be restricted to a milk diet much longer than the ordinary period of lactation (nine months), as after this time milk will not furnish the iron necessary for the child.

The problem of iron absorption and its distribution in the body, when inorganic iron is administered, has not been solved. It is not yet known whether the inorganic salts of iron take part in the formation of hemoglobin or of hematin. While iron, in its inorganic form, will combat chlorosis, and may be explained as forming hemoglobin, yet, on the other hand, its effect may be indirect; that is, only exciting those organs which have to do with the formation of hemoglobin. We do not know as yet whether chlorosis is actually caused by a lack of iron.

One fact in this connection should at least impress us. When inorganic iron is added to milk and administered to an animal or child suffering from low hemoglobin content, it has no effect upon the absolute amount of hemoglobin contained in the animal; but, on the other hand, does appear to accelerate the growth of the animal.

The difficulty of inorganic iron taking part in the formation of hemoglobin can be shown by noting the structural formula for hemin and the complex synthesis which must take place if the animal cell is to utilize it.

The structural formula for hemin is introduced here merely to show what a task the animal cell has to perform in the manufacture of this substance from inorganic iron.



The introduction of iron in this molecule is probably not difficult. It is to be noted that iron does not play the important rôle in this formation of hemin, but that there must be other organic material available. So in a practical way, when we think of inorganic iron participating by synthesis in the formation of hemoglobin, it must be recalled that other building material plays the important rôle in such a synthesis. The application is to give foods (such as meats, eggs, and green vegetables) which are rich in iron, and yet combined with other material necessary for the formation of hemoglobin.

Other salts of milk which in one way or another influence the metabolic process are magnesium, potassium, sodium, phosphorus, and sulphur. Potassium salts are essential to body growth. The potassium ion acts in the reverse direction to the sodium ion, since it promotes muscular relaxation. The sodium ion is essential in preserving the irritability of tissue, especially muscle tissue. While both of these salts appear to be essential, the former one (potassium) is usually supplied in sufficient amounts with our food, and the latter (sodium) is generally added by the cook. Magnesium salts appear to favor the inhibitory processes in the body, acting as a probable antagonist to the calcium salts, which appear to be activators.[25]

Phosphorus must be of much importance, especially during growth. It is found in certain important compounds of the body, in nucleo-protein, nuclein, nucleic acid, and the phosphatides—lecithin, kephalin, and sphingomyelin, which occur for the most part in nerve tissue. It is an important constituent of the human skeleton, and is present in milk, partly in organic combination as in casein and partly as in inorganic salt. There is a parallelism between phosphorus and the calcium content of milk and the rate of growth of the young of the species.

As Hutchinson points out that the brain of the new-born infant is doubled in weight during lactation, and as we have already seen phosphorus is an important element in its building, to say nothing of the skeleton, we can easily realize its import.

The amount of phosphoric acid in human milk is 0.05% per hundred parts by weight of milk. In cow's milk there is 0.20% per hundred parts; in rabbit's milk there is 0.99% per hundred parts. While the human milk contains the least, yet it appears sufficient for a proper development. This comparison of human, cow's, and rabbit's milk shows how difficult it is to replace one kind of milk with that of another when we take in consideration the wide difference in rate of growth as well as in the composition of the milk itself.

While the law of the minimum should hold in regard to the inorganic elements, yet we should not lose sight of the fact that though a milk substitute be rich in an element like phosphorus, it may be of little value; for in order that the cells may utilize phosphorus it is necessary for sufficient amounts of certain other substances to be present, as pointed out in the discussion of iron.

There is no doubt that in most of the dilutions of cow's milk there is an excess of certain inorganic salts, a fact now neglected in the feeding or normal infants. On the other hand, their presence may play an equally important rôle in the feeding of children already suffering from a disturbance of nutrition. This lack of the knowledge of the inorganic salts and the rôle they play in metabolism is in all probability one of the factors that account for a greater mortality in bottle-fed babies.

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Dr. L. B. Morse, Hendersonville: In regard to the reading of the papers on our program, we have somewhere in the neighborhood of one hundred papers. I have every reason to know and believe that the paper we have just heard is probably a most scientific one; but the time consumed is very great, and it is a question of getting through the program. If we devoted as much time to every paper as we have to this one, we should be here for three weeks.

The most successful medical meeting I ever attended was in Charleston, S. C., about four years ago, and I want to tell you how it came to be so successful. When the gentleman who was president at that time accepted that office, he did so with the provision that he might put in operation certain rules. Those rules were something like this: That time should not be extended on a paper unless to a person invited to attend the society from another State. The discussions were limited to a fixed time. When the time came for the meetings to commence, they began, if there were only two persons in the hall. If a man was not present when the time came for him to read his paper, it was placed at the end of the program, and if the society reached it, it was all right.

Now, we must adopt some such system as this in order to get through our program, and thereby increase the pleasure and profit of our society.

THE PHYSICAL FUNCTIONS OF THE NOSE.

Dr. C. N. Peeler, Charlotte, N. C.

This is an age of progress, and I am glad to say that it is becoming an age of prevention. Our State Board of Health is making a strong fight, along with the profession, for the prevention of disease, and thereby increasing the average life of the individual, at the same time increasing

the earning capacity of the community and adding to its aggregate wealth. Typhoid fever is rapidly becoming a disease of the past. Small-pox is not the dread disease it once was, vaccination being the great prophylactic treatment. Tuberculosis, the Great White Plague, is being slowly but surely conquered. Preventive medicine is making great strides—so great that typhoid fever is now regarded as a reflection on the sanitary condition of a community.

For the well-being and longevity of the individual I might say that four things are essential to his growth, development, and equilibrium:

1. Good nourishing food, properly prepared;
2. Fresh air, night and day, with all of its invigorating qualities;
3. Long hours of rest in refreshing sleep;
4. Proper amount of exercise or work.

Neglect any one of these, and a diseased condition of some part of the body is a result. (A chain is no stronger than its weakest link.) In this paper I shall endeavor to discuss the physical functions of the nose and how important it is that it should be kept in a normal physiological condition so that the fresh air may be prepared in such a way whereby the interchange of gases in the lungs may keep the blood in good condition.

Every person has a certain amount of inherent immunity against disease, and in order that this immunity may be increased it is important to the individual that he should keep all the organs of the body in normal condition, so that they may properly perform their functions, that when he is attacked by disease he may be able to destroy the infecting agent or to generate antitoxin whereby the pathogenic germs become harmless and are easily thrown off.

From the anatomical standpoint the framework of the nose is made up of bones and cartilages, and running through the center of the nasal cavity we have the septum which divides it into two fossæ. From the viewpoint of this paper the outer wall of each fossa is the important one for discussion. As was all Gaul, it is divided into three parts by the inferior and middle turbinate bones. The area of this wall is thereby increased about four times. In this outer wall we also have the openings from the different cells and the sinuses, which are important aids to these functions. Each cavity is lined with a thick layer of mucous membrane containing glands, blood vessels, nerves, and lymphatics. The mucous membrane covering the turbinate bones has a peculiar structure which calls for a special description. Its spongy character has long been recognized, and more than fifty years ago Cruveilhier defined it as true erectile tissue. Later Bigelow, Zuckerkandl, and others established the true

nature of this tissue. The deep layer of the mucous membrane forms the periosteum. Distributed freely through the connective tissue are lymphoid tissue and tubular glands of extraordinary length. Within this lymphoid tissue are numerous venous sinuses surrounded by an abundance of unstriped muscular tissue. This "erectile tissue" or swell bodies is subject to rapid and extreme variations in size under the influence of atmospheric conditions and of mechanical irritation, as well as of mental emotions. In dry air these bodies retract, in humid air they swell. Besides a large quantity of lymphoid cells in the connective tissue, there are also found a large number of lymphatic vessels. These vessels not only communicate with each other, but have branches which have numerous openings on the surface of the mucous membrane through which lymph fluid is discharged into the nasal cavity.

Just a word in regard to the accessory sinuses. Besides the numerous cells of the ethmoid and sphenoid we have the maxillary and frontal sinuses. These sinuses have a lining continuous with that of the nose. Their average combined capacity in an adult is about four cubic inches. Besides contributing to the resonance of the voice, diminishing the weight of the skull, and offering protection to the nerve centers, these cavities are emptied on inspiration and filled during expiration in the act of breathing, of which I shall speak later.

The two functions of the nose which I shall discuss are, first, *Breathing;* second, *Excretory or Bacteriacidal.* I might also mention the part the nose plays in speech. All sounds containing M, N, and Ng are nasal; all others belong to other parts of the tract or combinations of these. Also, I might mention smell. What we call taste is largely that of smell. Taste gives us only sweet and sour, salt and bitter. A cold spoils not taste, but smell. It is the sense of smell that recognizes tainted foods, rather than taste.

I. BREATHING.

The air in passing through the nose undergoes changes which might be divided into four parts:

1. It is filtered of its dust, coal smoke, bacteria, etc., by the nasal hairs, the cilia of the mucous membrane and the mucous membrane itself.

2. Heat is added to the air. This heat comes from the "swell bodies," mucous membrane, glands, and accessory sinuses. The amount of heat varies as the temperature of the external air varies. The elevation of temperature equals five-ninths (the body temperature minus the external air), giving us the rise of temperature. This air at freezing point is raised from 32 F. to about 70 degrees F. in passing through the nose to the pharynx—a very important point.

3. Moisture to the air. The air in passing through the nose becomes two-thirds saturated. This moisture comes from the mucous membrane, the glands, tears from the eyes and sinuses. It is estimated that the nose furnishes one quart of water to the air in twenty-four hours.

4. The sinus air is mixed with the external air to aid in the addition of heat, and, contrary to what the text-books tell us, they empty on inspiration and fill on expiration, as shown by operation. In addition, the ethmoidal cells act as nonconductors of cold for the protection of surrounding structures.

II. EXCRETORY OR BACTERIACIDAL.

This important physical function of the nose is brought about by the normal nasal secretion. This secretion is formed by the mucous membrane, glands, and the free lymph fluid discharged from the openings of the lymphatic vessels. It is claimed by investigators that within one inch of the nose there are found no bacteria. All the bacteria entering the nose in inspiration are caught up by above mentioned secretion and killed in greater or less time. Staphylococci and streptococci are killed in twenty and thirty minutes. Tetanus bacilli are the hardest ones to kill, requiring four to six hours, and other more common bacteria require from thirty minutes to one and two hours. To recapitulate: the physical functions of the nose are to filter, to heat, and to purify the air so that the individual may receive the greatest amount of oxygen and be rid of all the invading agents which reach the system through the respiratory tract, viz.: pulmonary tuberculosis, epidemic meningitis, poliomyelitis, the exanthemata, and the pneumonias, influenza, and the various colds.

THE KIDNEY FUNCTIONAL TESTS.

DR. ROBERT H. LAFFERTY, CHARLOTTE.

The subject of the kidney functional tests is receiving more and more attention each year, and rightly so, for when we consider the vast importance of these organs in the human metabolism, when we consider the difficulty that we experience in diagnosing kidney lesions, when we consider the necessity and importance of knowing their functionating power, we understand the avidity with which one seizes anything that will help him to learn something of their activity.

I shall not attempt in this brief paper to discuss the many tests that have been recommended from time to time. They all fall under one of two heads: the estimation of the output and the estimation of the retention. I shall discuss with you only one test from each group, the one that in the experience of most men and in our own experience has proven most satisfactory.

FIRST, THE ESTIMATION OF THE OUTPUT.

The Phenolsulphonaphthalein test of Geraghty and Rountree, in the experience of many and in our experience, easily occupies the first place among the tests in this group. It is harmless, simple, accurate, and easy. In our experience of hundreds of cases, although not followed by autopsy, it has proven of inestimable value, not only in determining the total activity, but also for estimating the relative power of the two kidneys. In nephritis, by revealing the degree of functional derangement, it is of the greatest value from a diagnostic and prognostic point of view, and in the class of cases known as cardio-renal it gives the examiner an idea of the degree in which the kidney is responsible for the symptoms. In diagnosing uremia, and also as a warning of impending uremia, this test has proven its worth. It has been proven of untold value to us as a guide to the best time for operation in cases of urinary obstruction, as is shown in the cases reported below. All in all, our experience has confirmed that of Geraghty and Rountree and many others who have used this test successfully, and we consider it an absolutely indispensable adjunct.

SECOND, THE DETERMINATION OF THE RETENTION.

For this, of course, we must go to the blood, and it has always presented many difficulties to the diagnostician. We know when the kidneys fail to carry off certain of the waste products we may expect grave results. We know that when the noncoagulable nitrogen, *i. e.*, the end products of protein katabolism, becomes excessive uremia results. We do not know which of these many products ("building stones," we sometimes call them) it is that produces this condition. We know it is not urea. The difficulty has been to get a method simple and yet accurate that could be applied to small quantities of blood. By determining the total noncoagulable nitrogen by the micro-kjeldahl method of Dennis and Folin, and the urea in the same specimen by various methods, especially by the urease method of Marshall, it has been shown that the urea runs parallel to the total nonprotein nitrogen. So by determining the urea in the blood we shall have an ideal method of estimating the retention. By this simple and accurate method we estimate the urea by converting it into ammonia and determining the amount of acid it will neu-

tralize. The normal blood urea varies between .2 and .4 gram per 100 cc. of blood; .5 gram per 100 is not considered excessive, while .6 gram is viewed with suspicion and is considered grave if it is on the increase. In rare cases the urea may run as high as 2 or 3 grams or more before uremia appears.

This test we have found very reliable and serviceable, especially combined with the phthalein, and it as a rule runs parallel with it. In bilateral renal diseases the urea retention increases as the phthalein decreases, although it is also a fact that it is possible to have some lowering of the phthalein without any marked nitrogen retention. Agnew claims that he finds retention when phthalein falls below 40% in two hours. In renal congestion this does not apply, although in cases of nephritis I think it does. When, however, our phthalein is low, our urea retention increasing, we have a warning that we cannot disregard.

We find this test of value also for keeping tab on the functionating power of the kidneys after prostatectomy, when the phthalein cannot be determined on account of the difficulty in collecting the urine.

A few of the many cases in which these tests have been of value to us may be of interest:

First case: Came in with retention 15 oz., January 22. Phthalein 10% first hour, 22% the second. Urea .5 gram per 100. February 20, 20% first hour and 35% the second hour. March 2, 12% first hour and 55% second. Urea .4 gram per 100.

Second case: Retention 12 oz., relieved and bladder not refilled for several days prior to examination on March 24. Urea .6 gram. Phthalein 12% two hours. March 28, 29% two hours. April 15, 36% two hours. Urea .40%.

Third case: Retention and irritation from catheterization for some time before examination on April 12. Phthalein 6% two hours. Urea .6 gram. April 20, phthalein two hours, 40%. Operation third day, after patient wandering in mind, etc. Phthalein impossible. Blood urea shows .3 gram per 100 cc.

There are three points I should like to emphasize as illustrated by these cases:

First. That the phthalein and urea run parallel, and that they are of special value in determining when the kidneys are in condition for operation.

Second. That in cases of retention the phthalein is generally low and will show a decrease if the retention is relieved suddenly, due to renal congestion, and in all cases where the retention is relieved gradually by partially refilling the bladder the phthalein shows better kidney action.

Third. In case 3 the blood urea enabled us to be sure uremia was not imminent, although symptoms seemed to so indicate on the third day after operation.

CONCLUSIONS.

First. That although there are limitations to the renal tests, they are of incalculable value, and that, combined with clinical studies, these two tests furnish us with a clearer conception of renal conditions.

Second. That the urease method of Marshall for determining urea is very satisfactory and furnishes evidence of impending uremia, and in some cases is indispensable, but that it does not take the place of the phthalein test, and should be used as an adjunct, since the determination of the cumulative phenomena is of great prognostic value, although its absence may be misleading.

MEDICAL JURISPRUDENCE AND STATE MEDICINE.

SYMPOSIUM ON NARCOTICS.

THE RELATION OF THE MEDICAL PROFESSION TO STATE MEDICINE.

CHARLES T. NESBITT, M.D., HEALTH OFFICER WILMINGTON AND NEW HANOVER COUNTY.

When asked by the chairman of this section to present this paper as a part of a symposium on government control of narcotics, I wrote him and asked if he desired me to confine my remarks to the relation of the physicians of North Carolina to the enforcement of the Harrison law. He replied that he wished me to deal with the subject in a broader way, covering the entire relationship of the medical profession to the enforcement of the laws which are identified with its interests. I realize that a volume could be written on this subject without exhausting its possibilities. I shall try to discuss briefly those phases of the matter which seem to me to be of the greatest importance to both the profession and the public.

There are no peculiar conditions in North Carolina which call for especial consideration. The physicians of this State are just as conscientious and honorable as the physicians of any other State or Nation. I shall ask, therefore, that my observations be received as applying to the medical profession of the whole country, and that no one shall understand me as criticising North Carolina nor any one in the State.

The law represents the effort on the part of society to control individual action for the benefit of the whole people. With the development of civilization, with its necessities for close human relationships and communal living, it has become necessary to abridge the so-called right of man to regulate his life in accordance with his desires. Originally each individual was compelled to undertake his own protection in every way. Later individuals banded together in families and clans. The success of this movement led to the formation of tribes for still greater protection. Then came communal, State, and finally National organizations; and with each step further restrictions were made necessary. At first these laws were expressed in the utterances of the tribal leader, and were simply fortuitous commands. When living became more concentrated in certain parts of the world, and it became necessary to govern

larger groups, laws were formulated and recorded. Until within comparatively recent times these laws were designed chiefly to control violence and to protect property rights. In the earlier conditions under which humanity lived the continuance of life and the maintenance of property rights were determined by physical fitness. The weak died and the strong survived. As living conditions became more complex, and as human learning and intelligence progressed, the realization came that the weak must be protected, that they might not become a charge upon the efforts of the strong. With the development of the knowledge of disease origin it was learned that the weak produce the greater part of the sickness, and still later it was learned that the sick are a dangerous source of the diseases which so frequently attack the strong. These truths which I have so crudely stated furnish the real basis for all the legislation which has been produced for the purpose of enhancing the physical welfare of mankind. It is with laws of this class that the medical profession is concerned. It has by its work and research laid the foundation for every such enactment, and by the influence of its organizations has promoted the passage of every such law. Personal interests have been put aside in the interest of race betterment to the extent that now the most potent influences in the profession are being used in an effort which bids fair to destroy curative medical practice as a remunerative profession.

There are influences still operative in the profession which are obstructing its altruistic activities, but with the elevation of the standards of medical education, and the elimination of the low-grade commercial practitioner through the operation of the medical practice acts in the various States, and the education of the public, the day will soon come when the profession as a whole will strive with the earnest purpose of preventing as well as curing human deficiencies. Modern conditions and the so often sneered at ethics of our cult demand that we shall labor for the welfare of humanity, no matter what the result to ourselves. We must ignore the remunerative side of our work in order to preserve our traditions.

Through the influence of medical organizations, the medical practice acts of most of the States have been remodeled so that no person can engage in the practice of medicine unless properly trained. Every educated physician knows that wherever an ignorant physician or quack operates, the well trained physicians of the community find an appreciable increase in their work in taking care of the invalidism created by these impostors.

The organized medical profession has been widely condemned because of its attitude with respect to the practice of osteopaths, chiropractors,

mental healers, and Christian Scientists. Never at any time has there been any reason to believe that the efforts of these so-called healers have interfered in the slightest way with the scientific practice of medicine, except by increasing the demand for it.

I have no doubt that the papers read in this section will indicate that the attitude of the physicians of North Carolina is decidedly favorable to the Harrison Anti-Narcotic Act, and that they are perfectly willing to submit to the inconveniences which its enforcement will produce for them. The medical organizations not only made the passage of this law possible, but they will give the weight of their great influence to secure its rigid enforcement. Every drug habitué is a chronic invalid who seeks medical aid frequently and who is, more often than not, good pay.

As a producer of disease, alcoholism stands at the head among the habit causes. Medical organizations throughout the world have proclaimed this fact for years and have given their influence to the enactment and enforcement of regulating laws.

The pure food laws which are now in force owe their existence to the influence of medical organizations.

Public health laws are founded upon the experience and research of medical men. It is true that the detail of sanitary science has been developed by the efforts of engineers, chemists, biologists, and bacteriologists, yet the necessity for the work of these scientific allies was developed in the research in the field of disease origin which is carried on by members of the medical profession. The functions of the physician are so diverse and so wide that it is difficult to find any legislation aside from that which is specifically drawn for the protection of property rights, governmental and social relations, and the prevention of violence, which cannot be traced to his influence in some degree.

No further argument is needed to show that the medical profession as represented by its organizations supports every effort for the betterment of the race, no matter how much its commercial interests are destructively affected thereby. It has gone so far in its support of National and State regulation of matters of this kind that it has been accused of maintaining a trust for the purpose of controlling all conditions affecting its welfare. Those who have made these accusations have not taken the trouble to investigate; if they had, they would find that the efforts that have been made most persistently and forcefully have resulted in limiting the financial and other advantages of physicians. Each new medical law is an added restriction, and the plain tendency of the times is toward the complete elimination of medical practice from the field of commercial competition. This may seem a very remote possibility at present,

but the State and National support of the practice of preventive medicine which is producing such splendid results will certainly suggest that the same plan for the application of curative effort is equally valuable.

There are two forms of influence operating in the medical profession which have yet to be directed into channels in which they will not conflict with the best interests of the general public. These are medical society politics and the individual influence exercised by members of the medical profession through their patients.

In every organization in which administration and control are decided by vote, the selection of the officials and the fixing of administrative and general policies are in the hands of a few members. These members most frequently acquire their influence, not so much through professional excellence as through their individual social qualities. There is constant danger in every organization so governed that the best interests of the public may be lost sight of in the scramble for preferment; candidates for important public positions may be elected through personal or political influence rather than by reason of experience and fitness. A striking instance of this sort occurred in one of the northern States. Through the influence of the medical societies this State established and financed an elaborate public health organization. Having created a number of important offices, they were given to physicians who had distinguished themselves in promoting the interests of the political party then in power. These officials were selected without sufficient regard for ability or professional attainment. The medical societies took no action that was noticeable to prevent this abuse. Recently there have been investigations into the administration and control of many of the public institutions of the country. In several instances these investigations disclosed the fact that ignorant and incompetent men had been placed in charge of hospitals, insane asylums, and other essentially medical public institutions, and that public money which had been appropriated for the protection of society was being applied to entirely different purposes. The medical profession and its organizations cannot evade a certain amount of the responsibility for such conditions. The public thinks that the physicians control these hospitals, and holds them responsible for every imperfection. When such conditions as these are disclosed the people are convinced that the medical profession is most to blame; that if these institutions are abused and their funds are misapplied it is because the physicians officially connected with them either connive with the politicians or permit the politicians to use these institutions as part of the political machinery. In this relationship to State medicine we occupy a position of very great

importance. The sentiment and effort of medical organizations as a whole are always in support of the best thing for the whole people; but as has been pointed out, the administration of medical organizations is usually left to those who have the time and inclination to seek such positions, and these abuses creep in through inattention on the part of the individual members who are so busily engaged in serving humanity that they have no time to devote to medical society politics. It is the plain duty of every physician to give enough of his time to his local, State, and National societies that he may keep in touch with every part of their spheres of influence. He owes it to himself and to humanity to lend his personal aid to the protection of the honor of his profession. We often hear that the people are losing confidence in physicians as a class. We hear also that the practice of medicine has become commercialized, that suffering humanity is being exploited for the benefit of individuals and institutions. We see pseudo-medical cults and brazen quackeries flourishing all about us, and many of us fail to realize that even though these practices are as old as civilization, the influence of an enlightened and honorable medical profession should have crowded them out of existence long ago.

All that is destructive in the influence of the profession can be traced to the influence of the individual physician who through ignorance, inattention, or selfishness fails to assume his full responsibilities. Neither the profession nor the public appreciate the quality and extent of the influence of the individual physician in molding public opinion. The most intimate family friend is the physician. He is consulted in every perplexity. He is usually looked upon as a man of broad view whose intimate knowledge of humanity and the conditions under which we live fit him beyond others to be a confidential adviser. A sufficient number of people still regard the physician in this way to make him a potent factor in the affairs of every community. The local administration of laws enacted to promote physical welfare is usually a failure if but few physicians give their patients and friends advice which conflicts with the requirements.

No law of any sort can be enforced unless the people are willing that it should be enforced. There is but one way to produce this willingness, and that is through educating the people to a realization of the benefits to be secured. This is especially true of public health regulations. The regulation of human conduct in matters of sanitation and disease prevention is a comparatively new field. The laity understands little of the nature of the benefits to be secured and less of the scientific bases of these laws; as a result they are usually considered oppressive

and confiscatory. In all matters pertaining to health regulations the family physician is appealed to at once. His opinion is usually accepted without question, especially if this opinion is in accord with what the inquirer thinks is his interest or convenience. It is impossible to say how much the physician may be influenced by the desires of his patient in giving this sort of advice. Whenever his advice is not in accord with the regulation in question there is a clash of authority which results badly for all concerned. Practically all opposition to health regulations is based directly upon advice and opinions which have been given by physicians. A physician giving such opinions should remember that if the health authorities promulgate a regulation they very rarely do so without sufficient cause and without authoritative support in public health practice. Every health officer knows that he must be able to convince his board of the value of a regulation before he can secure its passage, and every member of a legislative body realizes that he must be able to defend his actions before the public. The physician should also remember that unless he has had especial training in preventive medicine, or has given the subject very recent and thorough study, he is not competent to pass upon the merits of a health measure. While it is true that his education and experience are closely identified with the disease problem, his time and attention have been given to curative procedures rather than preventive measures. It is also true that the science of pathology is the basis for both branches of medical learning, but curative and preventive medicine diverge from this basis at right angles and meet no more. In pursuing the curative branch of the disease problem, the physician usually confines his study to diagnosis and to medical and surgical therapy. The student of preventive medicine must take an entirely different course. He must devote his time to the study of chemistry, biology, bacteriology, and engineering. He must study law, administrative procedure, and public health accounting. If he has ever practiced curative medicine he must change his attitude toward humanity completely; he must cease to deal with the individual as such, and must train himself to contemplate the disease problem as it affects humanity in the mass. There has been enough experience to prove that no physician can be a successful health officer while he continues to practice curative medicine. This is the most potent argument for the whole-time health officer. It is now being used as a reason for making public health work a branch of engineering, and there is little doubt that this view will be generally accepted in the future. It is certainly true that the scholastic training which is being given in our first grade universities to those who wish to adopt

public health work as a career will not enable any one so trained to qualify anywhere for the practice of curative medicine. There is probably not a physician in the country who could pass an ordinary civil service examination for a position in any up-to-date public health organization without especial preparation; few members of the medical profession have been brought to a realization of these truths, and those who have not do not hesitate to advise their patients and friends on matters in connection with which they have had neither training nor experience. Physicians are often sincere in thinking themselves qualified to give this advice. These simply do not realize that much is known on the subject that has not come to their knowledge. The laymen who receive the advice feel perfectly secure in following it because from the standpoint of the layman the physician is the only person to appeal to in any matter in which disease is involved. Every health officer has had the following experience: A health problem presents itself for solution. It may be an insanitary excreta disposal, a municipal waste problem, an epidemic, a water supply for the public, or one of many other such important matters. He studies his local situation closely, obtains and reads the literature on the subject, studies the methods that have been used in other locations, and perhaps consults recognized authorities in person, laying his problem before them and asking help. He laboriously develops his plans, places them before his board, and with their consent, which he obtains by convincing them that he has given the matter sufficient study and that his proposed methods are practical, he presents his plans to the public and asks for the cooperation which he must have in order to succeed. These plans may involve inconvenience to the public, or may necessitate expenditures on the part of property owners in making improvements. There may be some question of expenditure from the public funds for public facilities or service. There are few health measures which do not carry one or all of these features. In a few days Mr. Leading Merchant visits the health office. Perhaps he will begin by stating his appreciation of the efforts of the health officer. He winds up, however, by telling him that this new measure is not advisable, is too expensive, is a hardship, and without fail he will state that he has consulted Dr. A., who is his family physician, and that he has had the matter explained to him fully and has been told just how the situation should be met in a way that will disturb no one. Mr. Leading Banker follows up with advice and counsel from Dr. B., who has proposed a perfectly harmless and comfortable solution of the difficulty. Mr. Extensive Landlord and sometimes Mr. Popular Minister come in with felicitations and the plans of Drs. C. and D. All

these plans, as stated, are carefully adjusted to the comfort of the individual advised, and all are backed by the professional and social standing of the accommodating doctor. Not infrequently Mr. Rough Neck makes a stormy entrance without ceremony and tells the hapless health officer that he is a menace to the public welfare and that he should be suppressed. Sometimes he is rude enough to suggest painful and disagreeable methods of suppression which he thinks suitable. He is sure to tell his victim before he leaves that he knows just what he is talking about, because Dr. E., who was practicing medicine before the health officer was born, told him all about it. Allowance must always be made for imaginative activity on the part of these citizens, and the liberal construction they are led to place on the utterances of their physicians through self-interest. The health officer himself is so often misquoted that he should know how easily wrong impressions are spread. Citizens do not hesitate to quote members of health boards, even State health boards, in support of their contentions. The result is that after all his labor and pains in devising a way out of his difficulty, the health officer must devote months and sometimes years to the task of proving his contention in the face of what is generally accepted by the public as professional opposition. If physicians and health boards remain silent and permit this acceptance, then there *is* real professional opposition. The most important health matters are held up in this way, needless sickness and death occur, and many good health officers are compelled to abandon their efforts because the medical profession and the official health boards of the locality or State do not come to the front with denials and with active support of sound public health practice. Of all the relationships of the medical profession to State medicine, this is the most important.

It is the duty of every physician to recognize preventive medicine as a specialty more widely separated from his daily routine than any medical specialty. He should frankly tell his clients that he will not be prepared to advise them on a preventive measure until he can take considerable time to study the situation in all its aspects. He should know that preventive medicine is founded upon exact scientific data to a much greater extent than any of the branches of curative medicine; that theory and practice march more nearly hand in hand here than elsewhere; that every generally accepted public health procedure has been proven beyond all reasonable doubt. There are of course many preventive measures still in controversy and in the process of development, but these are not to be classed among the generally accepted methods.

There are enough proven procedures, if properly and thoroughly applied, to secure the practical control of smallpox, malaria, typhoid, typhus, diphtheria, tuberculosis, cholera, tetanus, and many other contagious maladies. If the members of the medical profession will so inform themselves and will advise their patients in support of these procedures, and will conscientiously refrain from criticising public health measures and public health officials without exact knowledge and sufficient cause, they will contribute tremendously to the educational effort which alone can make possible the freedom of humanity from the destructive preventable diseases.

THE HARRISON ANTINARCOTIC LAW, AND THE DUTY OF THE MEDICAL PROFESSION.

By Dr. J. Howell Way, Waynesville, N. C.

(President N. C. State Board of Health, ex-President Medical Society of the State of N. C., ex-President Tri-State Medical Association of the Carolinas and Virginia, etc.)

March 1, 1915, will stand forth in the annals of human effort to restrain the use of narcotics as a date marking, in a practical way, the beginning of a new era in our Nation as regards the traffic in "opium or coca leaves, their salts, derivatives, or preparations." On that date the Harrison antinarcotic law went into effect, and for the first time, so far as I am advised, the physicians of this Nation became subject to a Federal license law and its accompanying special tax.

The suddenness with which the announcement came that practitioners of medicine, dentists, veterinarians, and others must procure Federal permits to continue to ply vocations hitherto solely licensed and directed, from the earliest days of the Republic, by the various States, was more or less of a surprise to probably the majority of the professional men affected by the statute. In many instances there were manifestations of a degree of irritation or resentment on the part of physicians, as well as dentists, veterinarians, and pharmacists, at this extension of the power of the Federal Government, with its resultant limitations of accustomed professional rights and privileges of practice. Some protested they would not register under the act, but, possessing State license to practice their profession, would continue in their accustomed work without regard to the Nation's restriction. With the passing of a few weeks, and the campaign of education carried on in limited degree by the medical, dental, and pharmaceutic periodicals, more especially the latter, and the

really helpful trade circular literature distributed by manufacturing and wholesale drug firms, as well as the circular-letters to the interested professions distributed from the various internal revenue offices to those concerned, wiser counsels prevailed, and all law-abiding citizens, whether professional or laymen, realized that none of the narcotics enumerated in the Federal law could lawfully be "produced, imported, manufactured, compounded, sold, dispensed, or given away," to quote the language of the enactment, until all the forms and formalities of the statute had been complied with. Registration proceeded rapidly, and I was recently advised by an official of the service in North Carolina that few if any individuals, entitled under State law to handle narcotics, had failed to comply with the Federal regulations.

Following the passage of any legislation along new lines there is always to be anticipated a period of uncertainty and indefiniteness as to the full requirements of the law, its exact purposes, and the detailed methods of operation whereby the officials intrusted with the enforcement of such statute propose to attain the wished-for results. The confusion in the various professions and trades affected by the Harrison law was only what was to have been expected; but this has entirely subsided; in the main, rational constructions have been placed on the wording of the law, and those wishing to comply with its provisions are finding, in my opinion, little difficulty in so doing. The statute is not yet perfect, and there may be objection to such statute, both in principle and in practice, many excellent people believing the entire control of all such matters should abide solely with the lawmaking powers of the people of the several States themselves. Be that as it may, the step has been taken, and the regulation of the sale of not only the narcotics noted in the Harrison antinarcotic law, but of various other things as well, will in time undoubtedly become a matter of National supervision and control.

Though bearing the name of its supposed author, the law does not represent the conception nor is its phraseology the fruition of the efforts of a single mind. The apparent necessity for and advisability of such enactment has been an evolutionary process in the social life of our Nation, and the process has been going on in other countries as well. The apparent necessity for Government control of narcotics, while coming as a surprise to many, has been a very gradual growth. Its development has been *pari passu* with the evolution of the intricacies of modern civilization and the more complicated environs within which we live today. It is one of the perfectly normal steps, one of the logical, one of the to-have-been-expected movements that an enlightened nation would have initiated sooner or later in the attempted throwing off a people a

burden of slavery; a thing, a condition, against which the race has ever contended in its varied forms. From the earliest dawn of civilization until now, and not only now, but on and on through future untold generations until man shall attain the summit of all his possible excellencies, and shall achieve his perfect physical, mental, and moral standard of attainment, there has been, and will continue to be, a ceaseless, incessant struggle against the things that bind the progress toward its rightful ideal of a human soul, and restrict the fullest fruition of humanity's powers. This struggle to free ourselves from the slavery of the environs of custom and of influence is as old as man himself, and in the dim and misty past, centuries of struggle, millions of lives lost, treasure of inestimable value lavishly spent, mark the conflicts incidental to the evolution of mankind, of perfected man, as he contended against tribal slavery, feudal slavery, the dominion of oligarchy and monarchy, chattel slavery, until at last man, in free America at least, has reached a partial attainment of freedom, a semblance of true liberty which the world had never known before. In Europe, war-cursed and king-ridden, we today witness humanity struggling in the working-out of a portion of these problems.

Evolution, we have learned, is continuous, progressive change, according to fixed laws, by virtue of resident forces; hence there may be no stoppage in such processes of developmental purpose unless retrograde processes dominate and determine our course. The contest of mortal man for his rights as regards his relations with his fellows has been magnificent in both intent and achievement, and we feel, at least in free America, that all men may secure a living chance. But with the acquiring of this priceless blessing there comes the danger to the race of domination by the direful influences of the slavery of unrestricted appetites, and it is this factor in our promising civilization that must be fought, lest the splendid structure, painfully wrought with ages of endeavor, crumble and fall from internal decay.

Mankind from earliest recorded history has at every period of his existence, and in every nation or organization of individuals, manifested a morbid desire for stimulation, and every country and all people, bond or free, civilized or barbarian, alike, have evolved some form of product, or secured by traffic from others, something that would stimulate or narcotize—some material in some form that would bring tone to tired nerves or rest to wearied brains, and relieve the body when pain-racked. Alcohol, in its many forms, has been most widely and generally used in all ages of the past, as it is today, and while alcoholics are not included in the list of drugs specifically restricted by National legislation, as are opium and coca in the Harrison law, there are many thinking minds

who well deem it merely a question of time when their usage will be limited as compared with present-day consumption, if not wholly erased from the list of narcotic substances ordinarily accessible to weak men and women.

The Harrison antinarcotic law, as I have already noted, is not the work of one mind, nor the framing of its phraseology that of a single pen. During three sessions of Congress the measure was considered, and even now as passed, and undergoing the testing out of actual service, it is evident that it will undergo modification, or amplification, as time passes. Its scope will manifestly be extended later on to include other drugs and medicines affecting in similar manner the human species to those now mentioned, and I am constrained to believe the recently suggested move in New York State to secure the passage of a "model antinarcotic law" in the various States of the Union will have an experience like the "model vital statistics law" which went the rounds of the various State legislatures, gradually winning favor in increasing number each year until finally all the separate States will have similar statutes restrictive of the careless use of all narcotics. In fact, several of the States now have antinarcotic laws, and the large majority have provided for the teaching in their schools of the effects of narcotics and alcoholics on the human body. But in practically all of the States there exists scant or minor provision for enforcing such laws, and a considerable number of such laws are so burdened with provisions and exceptions as to practically nullify the obvious intent of such statutes to restrain drug users and decrease their growing numbers. In addition to the drugs enumerated in the Harrison law, several of the States restrict the sale and use of a number of other drugs. In twenty States it is unlawful for physicians to prescribe narcotics for habitual users—one extreme—while our good daughter State of Tennessee provides for the registering and licensing of narcotic habitués. New York permits the sale of hypodermic syringes only on physicians' prescriptions, and requires the registering of all such sales; and when it is remembered that such instruments are used *solely* for the introduction of narcotics or stimulants into the human body, barring the other minor uses by medical men and laboratory investigators, I believe measures restricting sales of hypodermic syringes should receive the careful consideration of our next North Carolina Legislature.

The extent to which narcotic drugs are habitually used by citizens of our Nation, or even of our State, is only a matter of conjecture. The number of drug habitués has been variously estimated by different authorities as ranging from 100,000 to 4,000,000 for the entire Nation.

Manifestly a relatively accurate estimate is practically impossible of securing, but it is well to remember in this connection that the number of habitués is limited to an extent at least by the amount of the available opiates, and the visible supply of narcotics would not, in the judgment of the Federal authorities, suffice to supply in excess of one-tenth of the maximum number mentioned above. As far back as the year 1866 Dr. Edward R. Squibb, testifying before a congressional investigating committee, stated that at that time not more than one-fifth of the opium imported into this country was needed for the legitimate demands of reputable medical practice, and the Government experts who have been more recently studying anew this whole proposition believe this estimate a fairly correct one for the present day.

Be the number of narcotic habitués what it may, in North Carolina or in the Nation, it is manifest to us of the medical profession that a tremendous responsibility has rested in the past, and in no less a degree rests today upon the individual members of the guild in connection with the users of narcotic drugs. Just what shall be done for those now in the thralldom of narcotic habit is a problem that calls for immediate legislative action. I trust that an enlightened and quickened public conscience in this State will see to it that this important subject is carefully considered at the next session of the State Legislature with a view to making proper provision for these unfortunates. Certainly the State of North Carolina should provide for the examination and treatment of narcotic habitués as a wise and patriotic public policy; and it may seriously be questioned, in this connection, if the progressive State of Michigan goes a single step too far in having enacted legislation which provides that any citizen of Michigan who is addicted to the excessive use of intoxicating liquors or narcotic drugs may, after due examination, be declared incompetent by a probate judge, and a guardian of his or her person appointed. Is there a single community in North Carolina today where the putting into force of such a statute would not be fraught with beneficial results? Would not such a measure, wisely enforced, conserve property rights of patient and long-suffering women and little children, besides exerting a most helpful influence in restraining the subjects of narcotic habit? I here mention the vicarious sufferings of the opposite sex, gentlemen, not to convey the impression that the misuse of narcotics is solely a masculine errancy, for it is not, but especially for the reason that I believe the chief indirect sufferers from these habits to be women and children. Womankind, we well know, cares for and clings to fallen man much longer than men do to women when the conditions are reversed. When the State of North Carolina enacted its prohibition

statute in 1908 the initial step in the direction of further legislative effort was taken, and it may be questioned if we are not now ready to extend farther our lines of effort to save and to help our weaker members of society by providing legislation along the lines of the Michigan statute referred to.

That is a matter for future consideration, but the practical question that confronts us of the medical profession of the State today is, What may the North Carolina physician do to further promote the beneficial results which it is hoped will accrue to State and Nation by the enforcing of the Harrison antinarcotic law? Can we do anything? Yes, I believe, very much. No body of men exert today a more potent influence on the progress of the social affairs of life in this State than do the members of this body of physicians. And this for the very excellent reason that our medical practitioners, best of all men, understand humanity, its aspirations, its purposes, its strength, its weaknesses, its capacities and incapacities, and may best judge of the limitations of human endeavor in its many lines of activity. Again, to none is offered the opportunities for service that come daily to us along the lines of helping the people to help themselves. Here, as in other phases of modern public health work, prophylactic endeavor pays best. Primarily all physicians should lose no opportunity to impress upon their clientele the fullest knowledge of the inherent dangers incident to the use of drugs or medicines of any kind whatsoever which allay pain or stimulate quickly to bettered feeling. If every dose of sedative, stimulant, or narcotic administered, especially in those cases where from the inherent nature of the affection there exists a liability to a recurrence of the condition, was with knowledge on the part of the patient of the possible dangers lurking in every pain-relieving hypodermic, pill, potion, or powder, our duty to our patients would have been more fully discharged. To properly impress patients with the dangers of the careless and inconsiderate use of this class of remedies—valuable, helpful, and in fact indispensable as they are in practice—does not necessarily mean taking him into our confidence to the extent of advising as to the details of name or dosage; quite to the contrary. I do not believe patients are the better for knowing such intimate particulars of therapy.

As citizens we should encourage and lend our aid to every intelligent effort to secure needful legislation regarding further limitations of the sale of all such drugs and remedies, and, in addition, the providing of places for the treatment of all narcotic habitués. And when I say this I mean to include in the legislative program measures for the relief of alcoholics, to the end that they may be lawfully considered and

treated as unfortunately defective members of the body politic, and restored, as near as may be, to their normal physical condition. To further these beneficent ends results of the scientific study of the subject in general, and the work of other States and countries in caring for similar conditions, should be placed before our citizens as opportunity is afforded, and especially should our boards of health, county, municipal, and State, carefully consider and treat this whole subject of the use and abuse of narcotics and alcoholics as an essential and vital portion of the up-to-date public health program.

What shall we do with that other menace to securing greater freedom from the uses and misuses of narcotics in the community, the counter-prescribing druggist? His class is readily divisible into two groups: the one composed of really honest druggists desiring to do only a thoroughly legitimate drug trade, but who are daily importuned to sell narcotic drugs and remedies by the public, a portion of whom are the victims of the careless prescribing of narcotics by physicians in some former illness, when the foundation for a narcotic habit was laid. This type is entitled to our kindly consideration, and all thinking medical men recognize the great difficulties druggists have in complying at all times with the spirit and the letter of antinarcotic regulations, and give them due credit for doing their duty, in the main, and trying to avoid catering to the weakness of habitués. The other type of druggist, always ready to dispense at the fountain almost any sedative or narcotic known to the materia medica, and to suggest one that possibly the patient may not have tried, besides being ever ready, willing, and anxious to exhibit his thorough command of not only the remedies used in the treatment of disease and their manner of compound, but by prescribing for every pathological unfoldment of body or mind from abscess to zygodactylism—well, I frankly admit my incompetency to prescribe the best disposition to be made of him, though I am putting my trust in an enlightened public sentiment, plus the subtle assistance of the Federal deputies operating under the Harrison antinarcotic law, as probably in the end sufficing to accomplish either his destruction or reconstruction.

Lastly, my brothers of the profession, but far from being least, let us as individual citizens each strive to keep ourselves personally as well as professionally clean and free in our own daily lives from the vice of narcotic misusage, carefully seeing to it that our daily lives in both personal and professional practices are so ordered and conducted in our every relation to all narcotics that we may be viewed in every community in North Carolina as men whose personal examples in living their theories emphasize the value to society of the clean-bodied physician as a helper and a savior to his fellows of the race.

A FEW REMARKS ABOUT THE HARRISON ANTINARCOTIC LAW BASED UPON ITS ENFORCEMENT SINCE LAST MARCH.

S. M. Crowell, M.D., Charlotte.

Ladies and Gentlemen:—In the first place, I wish to apologize for an impediment in my voice, caused by the absence of a piece of the upper jawbone, a result of a professional "encounter" with a dentist recently.

Before beginning to read my paper as prepared, I will make a remark on a phase of this subject which came to my mind during the reading of the other papers in this symposium, and allied subjects.

In the first place, I feel that it is a calamity that we, as doctors, really know so little of the subject of drug addiction and the *condition* of those enslaved, and still less about the best methods to relieve the habitué. It seems to me that even Dr. Lambert of Mr. Towne's Sanatorium, judging from his writings, does not yet have the best idea about this subject or its treatment. Really, it appears to me that his logic is poor for one of his ability and reputation. But perhaps Dr. Lambert does not see so much of his patients at first hand, much of his information coming through assistants and nurses. However this may be, it behooves us as professional men in charge of these unfortunates to study and become more familiar with this subject, for these thousands of people are dependent almost wholly upon our advice for treatment, care, comfort, etc.

When this law was first called to our attention it came like the "thief in the night" of Holy Writ, causing surprise and astonishment; the majority of physicians and druggists, at first thought, condemning the law and its author on account of the inconvenience to these professions. However, after more mature consideration it was decided that it was a pretty good law after all.

As to *why* the law was passed, primarily, God and our *all-wise* United States Congressmen only know, as the bill seems to have been *rushed through* before any one scarcely knew it; but the *presumption* is that it was to stamp out the great and growing National evil of drug "bartering" and using in America, and especially to eliminate the many dives and dens, and their accompanying evils, of the larger cities where the evil has become such a *serious* problem. Even in my own small city certain drug stores and individuals made it a practice to sell opium and cocaine in large quantities to certain persons, who would in turn "retail" it to habitués and "sniffers" for so much per "hop" or "sniff." The re-

sult was that we had many purse snatchers, and highway robberies were frequent. So frequent were these "hold-ups" that it was not safe for a lady to walk the streets alone. No, these assaults were not confined to the fairer and weaker sex at night. Really, one of our prominent young attorneys was waylaid and assaulted by a cocaine habitué not many weeks since. A great number of these cocaine victims have been convicted of these crimes and sent to the chain-gang, practically all the subjects being confined to the negro race. I find that these assaults are confined to the *cocaine* habitué when *any* drug is involved.

Perhaps another reason for the adoption of the law was to create a revenue, or "war" fund, for at one dollar each for registration fee, plus the amount for order blanks for every doctor, druggist, dentist, and veterinarian in the United States, and its "world-wide annexes" or dependencies, quite a *snug* sum would be realized to help fill the treasury at Washington City, to pay off the departments' many employees.

In reply to my question as to what they thought of the Harrison law, many doctors, dentists, and druggists have replied that it had made it almost impossible to secure the drugs except in a legitimate manner. Personally, I think it a most excellent start in the right direction; however, I think there should be some provision made for the indigent or poor habitués, and shall refer to this feature later in this paper.

Under my observation since last March have come many appealing and pitiable cases of drug habituation. First was the poorer class who were scarcely able to secure the drug under the slack laws and "merciful hearts" of the druggists under the old régime. Many have been forced to go without the drug until their sufferings were beyond the comprehension of those not so familiar with this class of patients. I have known them to go hungry and cold, often selling their scanty clothing as a last resort to secure prescription and drug. Upon interviewing the chief of police of Charlotte, N. C., he gave me the following opinion and information: "First, the Harrison law gives me about three (3) crazy people per week," and that he thought that the law would ultimately solve the dope evil; "that we are just now passing through the crisis." I, too, feel that the law will very soon solve to a large extent the "bartering" and "dive" and "Red Light" District and evils arising from these narcotics there; but those *addicted* to the drugs must be *cared* for or treated by the Government, also, before it's possible to *solve* the problem *in toto,* for they must continue to *have* the *drug* till treated; hence, the problem is not yet *solved,* but much *improved.*

The second class was confined to those who had no trouble in getting the drug, or those termed the "better class." As a rule this class has

plenty of money, hence escape the above troubles. But some of them had their troubles, too, as they had their supply furnished through servants and friends in general to avoid exposure and publicity. When this law became effective and their supply was exhausted, their *pride* would not allow the habitué to expose him or herself, hence there *was all kinds* of trouble to *all parties* concerned.

For instance, one case, the wife of a prosperous business man in another State, who had secreted the addiction from her husband and friends for nearly ten years, became very ill, wild, hysterical, and then semiconscious, etc., when her faithful servants could no longer supply her, and she was brought to my sanitarium March 26, 1915, by her physician, a physical and mental wreck—a woman whose modesty or pride would not allow her to divulge her misfortune even to her loved husband and faithful family physician. After a few "shots" of morphine and a good stiff drink of whiskey her mental faculties were sufficiently restored for her to tell me the story of her secret addiction, consequent suffering, etc., and in substance, the above history. After a morphine treatment of about five weeks she was sent home a well, wiser, and happier woman of forty-six years.

Another class is represented by another case, a widow of forty-five years of age, from a prominent family from another State also, who was brought to my place April 1, 1915, in a semicomatose state. Had used laudanum for twelve or thirteen years, known and unobjected to by family and immediate friends, but on account of the trouble and notoriety gained by securing the drug under the present law, decided to have a local doctor treat her at home after having tried the various "sent-off for" cures. After she had become wild, and presented a serious aspect, after having stopped the laudanum, this "home" doctor hurried her to my place, after having restored her usual dose of opium. The above history was elicited from a party who accompanied her. We found her urine literally *loaded* with albumen and tube casts. She was put on Sparteine sulphate in gr. 2 doses and strychnine nitrate gr. 1-30, both hypodermically, every four hours, as well as morphine sulphate, gr. ¼ every two to four hours. She was also given, by force, large quantities of water and milk to drink. Under this course consciousness was soon restored, urine cleared up, and she was given the opium treatment as in a normal case with the best results.

Another class observed is represented by those who secured large supplies before the law became effective and continue its use under "cover"; however, a number have begun inquiries about treatment, not knowing what will be the ultimate effect of this law.

As the Grier or antijug law will very materially *reduce* the drink evil, so will the Harrison law very much reduce the consumption of the narcotic drugs, (1) by avoiding the *beginning* by careless or malicious prescribing of these drugs, and (2) by the reduction of the number of habitués, who will be cured rather than secure the drug as they must under present régime.

In closing, I wish to emphasize what I have said before this body several times previously: *Every State should make provision to care for and treat its indigent habitués and inebriates. It is high time for us to stop sending* this class of our sick-poor to the chain-gang when they should be placed in a well-equipped sanitarium for scientific treatment, which feature we cannot consider at this time. We care for our syphilitics and alcoholics, and this class has just as good right to be cared for in a similar manner.

WHAT NORTH CAROLINA SHOULD DO IN THE REGULATION OF THE SALE AND USE OF NARCOTICS.

By Hon. J. W. Bailey, Collector of Internal Revenue for the Eastern District of North Carolina, Raleigh.

Mr. Chairman, Ladies and Gentlemen:—I consider it an honor and a distinction to be invited to address this society of learned scientists and leading citizens of our Commonwealth. I did not expect to be introduced as the guest of honor; that is, I am sure, a great deal more honor than I am worthy of. I am on the program for discussion of what North Carolina should do in the regulation of the sale and use of narcotics, and I am going to take the liberty of discussing the whole field of the Federal and State regulation of the sale of narcotics with a view of determining my answer.

The United States has enacted within the last three years three very great and far-reaching acts in the form or the nature of police regulations—the White Slave Act, the Webb-Kenyon Act, and the Harrison Narcotic Act. The greatest of these in its significance and in its actual object is the Harrison Narcotic Act. For my part, I have been amazed to see with what ease so great and far-reaching a measure was passed, significant in its relation to the fundamental law and policy of our country and of the States, and significant, too, in its relation to hundreds of thousands of individuals; significant also in its relation to trade. I

say that I have been astonished that so great and far-reaching an act could have been passed by our Congress practically without opposition and almost without observation. I dare say a great many members of this society and a great many leaders of the political parties, not to mention the great rank and file of the people, did not know the Harrison law had been enacted until its enforcement was on the way by means of the offices of the collectors of internal revenue in the several States.

You will be interested to know the origin of the Harrison act. It originated at Shanghai, China, in an international conference: that is, a conference representing the far Eastern nations, the nations of Europe, and the more leading nations of our hemisphere. That conference took place five years ago, and let it be said to the credit of the Kingdom of China, now the Republic of China, that that nation took a leading part in this cause. The United States was represented there. Two years later a conference of the representatives of the powers that first met at Shanghai met at the Hague, and there the *signatories* to the conference agreed that they would return to their several nations and move the immediate enactment of a law to prohibit the use of opium for other than strictly medical purposes. So our act was passed, not in response to popular appeal in the United States and not in response to a popular realization of its need, but in response to what well may be termed international conscience, and that is where it got the great force that swept it into form and into the law without any popular propaganda in this country.

So much for the origin of the act. Now for the object.

The object of the Harrison act is to get hold of the opium habit, the slavery to narcotics other than the alcohol narcotic; to prevent the increase of the opium habit and at the same time to reduce the use of opium and to cut down the number of habitués to the greatest extent possible. It is an immense measure of national and international conservation and it is the most tremendous conceivable sort of moral enterprise. It is world-wide. It is a magnificent spectacle, gentlemen of the society, to see all the great nations of the earth rising so readily and with such force to a cause like this. I do not hesitate to say that it is something new under the sun; and at a time when the world seems to be filled with muck-rakers and the evil that men do is brought up in heaps before our eyes with every newspaper and every monthly magazine, it must be infinitely refreshing to all men whose faces are in the light of the morning, it must be infinitely refreshing to see not only our Nation, but all the nations of the earth, rise to the moral height of undertaking to save millions of men and women from the hopeless and horrible slavery of opium and its derivatives. And may I turn aside

here to pay tribute to the one class of men who might have made an argument against this law, the pharmacists and druggists of this country?

At a time when our country is said to be in slavery to the almighty dollar, we have the magnificent spectacle of the pharmacists and the druggists and the physicians of our land not only not opposing this act, but being the chief responsible sources of its passage. That, too, is a magnificent tonic for a world that has been dosed, if I may use the language of the doctors, with the doses of the muck-rakers for the last twenty years. It is one of the good and beautiful things of our time.

So much for the origin and so much for the object. Now, a word as to the method. The method of the Harrison act is in the first instance the method of publicity. I may turn aside here to say that since as Collector of Internal Revenue for the Eastern District of North Carolina I began to put this act into effect early this year I have had very few complaints from physicians against the irksome red tape of the act. I bear you that testimony. I think we Southern people, we North Carolinians, rather resent the tyranny of close-knit laws; we rather chafe under what we call red tape and blanks and complying with all manner of little details; and I was prepared for some protest. I did receive a very hot letter from a physician whom I esteem. He was going to sever political relations with the party that put the act in force. The next time I see him I am going to tell him that the movement was started with one party and finished with the other; that it has no political aspects whatever, and that its origin is deep as the conscience of an enlightened universe, and not political at all.

The method is the method of publicity. The Government requires that all opium—I use the word opium to cover the *whole reading of narcotic*—purchased shall be reported upon blanks furnished by the Government. It proposes to keep up with every ounce of opium from the hour it reaches our shores until it has been consumed. We have our external revenue system. Every ship has to declare herself when she starts and make manifest. We'll know how much opium comes, we'll know where it comes, and we'll hold to the strictest accountability under this Harrison act the receivers of this opium. Now, that gets it into the hands of the first distributors. From these it is purchased by the druggists under Government regulations and supervision; and the physicians obtain it from the druggists.

The physician is permitted, of course, to prescribe it, but he prescribes it under a registered number, and that number is one by means of which you can trace whatever he does. Now, all this is a broad contrast to the North Carolina system. We have in North Carolina two narcotic laws—

one relating to opium and its derivatives in general and the other relating to cocaine. We pass the law, we make it a misdemeanor, and then we drop it. We have no machinery. The sheriff and the solicitor may act if they care to; the pharmacists of this State have acted in numerous instances; but that's voluntary action. So far as the State is concerned with respect to this law, and a great many other of its penal laws, it has been content to merely declare the crime and name the penalty. The Harrison Narcotic Act not only declares the crime and names the penalty, but it names a tremendous penalty—$2,000 fine or five years imprisonment or both, in the discretion of the court; then provides every possible means of publicity, and then provides a system of inspection that ramifies the whole country and every detail of the commerce in opium.

Now, in my judgment, that is the way to get at a great task, and if you gentlemen, as I am sure you are, are in sympathy with that purpose, you are not going to protest against the irksome details of red tape necessary to this publicity.

I wish to say a word further about the significance of this enactment. Very clearly, gentlemen, this act is in the nature of a police regulation. It is aimed directly at what we call moral reform. It finds our people beginning to be addicted to the habitual use of narcotics, and, knowing the history of the Eastern nations, practically decadent because of this one great evil, it levels itself at this great problem, notwithstanding the immemorial doctrine of this country has been that the United States as a Nation has nothing whatever to do with the police regulations of the States. You understand that is why in order to get National prohibition you would have to have a constitutional amendment. The decisions in the Massachusetts and Kansas and South Carolina cases have established that.

But, somehow, when we come to the case of the other narcotic, opium, the Circuit Court of the United States, sitting in the State of Washington within the last six weeks, has declared absolutely that the Harrison Narcotic Act is constitutional. I will make known a little distinction, lest some good brother very much attached to State Rights may feel that the powers of the State are being impinged upon. That decision is based upon the judicial recognition of the fact that opium is not produced in this country and that, therefore, the United States has the right to trace any opium that comes to our shores from the time it reaches here until it is consumed, and lay any penalty upon any improper administration of it. We have gotten to the point where our

National Government has undertaken the matter of police regulation or moral reform and gotten by the doctrine of State Rights and all the other obstacles.

The Government is perfectly safe in the administration of this law and perfectly secure in attaining the objects for which it was enacted until it gets to the point of the conscience of the physician. Now, the United States has passed this law for two purposes. One is to cut off the supply of opium from the present habitués; the other is to save the rising generation from becoming addicted to the opium habit; and it has placed upon the hearts and consciences of the physicians of the country these two great responsibilities. Gentlemen, we can handle the pharmacists and the importer, but when we come into the presence of the physicians of our land the Government bows obeisance. Upon you are laid two great duties. One is that you shall do nothing to propagate this habit. A physician told me this morning on the train that a great many addicts of opium found their first way to it by means of the kindliness of some physician. Of course, you find it necessary to prescribe narcotics, and the Government recognizes that. The other is that you shall so deal with the habitué of opium as to save him, if possible.

Now, the law being administered through the physicians, the Government hopes that it will be so administered as to gradually free our country from the bonds of this drug. I don't hesitate to say that the Government of the United States looks forward to the time when in place of the 100,000 slaves of morphine and opium in this country there shall be none, and when the menace of the opium habit shall have utterly disappeared from our land.

Now, I am asked to discuss what North Carolina shall do. Dr. Rankin named the subject. I told him I would come and speak generally. I did not know that he would frame his subject in these terms; but when I saw that I had this subject I posted myself on the North Carolina law on the subject, and I must say to you, gentlemen, in all candor, that I don't know that there is anything North Carolina should do but what she has done. That may be tremendously disappointing to you gentlemen, but if we are doing well enough we ought to know it. Upon my reading of the cocaine law and the antinarcotic law of our State, in which the dispensing of narcotics is placed upon the consciences of our physicians, I am prepared to say that these two laws, expressing the will and the mind of the Commonwealth on the subject, in addition to the Harrison act, which undertakes to provide the means and the method on the subject and the proper penalty, that in my humble judgment there

would be only one thing for North Carolina to do, and that would be to provide a system of inspection, and I do not think at this time that would be a good thing to do, for the simple reason that the United States Government has provided us with two inspectors, and they are expert men, men taken from the scientific ranks, pharmacists.

Now, we couldn't have any serious objection to the State putting up a system of inspection. But the system that the United States has and the jurisdiction that the United States has is far more efficient—I say it with all due respect to my State—than any system that the State could put up. If you gentlemen are inclined not to believe me on that point, consider for a moment the matter of our laws with respect to the manufacture of liquor. You see most infrequently, not over once or twice a year, any one being prosecuted in a superior or county court of North Carolina for manufacturing liquor; but if you will read the papers you will see that there are about 700 or 800 prosecutions in the Federal courts. Now, why? Simply because with the vast power of the Government, supplemented with the psychological reason that the Government of the United States is farther from the individual than the State is, we find that we have a more efficient jurisdiction. I think I can give you an illustration. I recollect when I was about eight or nine years of age my father undertook to cut my hair. The barber had cut it, and when my father undertook it he found me very restless. I remember how he said, "William, why don't you sit still like you did when John Brown, the barber, cut your hair?" There entered not less of respect, but more of the personal relation. I could take liberties with my father, but I had a great awe of that barber, whom I had seen but once or twice in my life.

The Government, with its center at Washington, takes no personal note and takes no political note of any litigant. The man is tried in a county in which the jury is not found. He may be tried in Greensboro with jurors from Wilkes or Cabarrus County. He is tried under the dry light of the law; but in the Commonwealth I fear in a great many instances he is tried in the wet light of the personal relation. So I prefer, gentlemen of the society, that we should maintain our status; that is, with two strong laws on our statute books expressing the mind of the Commonwealth on the subject and so giving the United States the moral support of the Commonwealth, and then leaving to the United States, with its broader jurisdiction, with its greater penalties, with its infinite resources, and with its uniform legislation throughout all the States, the great task of grappling with this evil.

Now, gentlemen, I thank you for your attention. I don't want you to forget the one word that I said, that in the last analysis the Government, our Government, all other governments, lay this great task of the conscience of the world, this tremendous social evil, upon the hearts of the physicians of the race.

I would like to say, in conclusion, that I have brought along with me all the rulings of the Department and the adjudications in the courts. I have a copy of the law also with me, and if any one here wishes any special information I will be glad to undertake to answer him either publicly or privately.

I thank you very much.

Dr. J. Howell Way: Mr. President and gentlemen: It was a forceful, an entertaining, and an instructive address to which we have just listened, and I wish to take just a moment to express personally and for this society the pleasure that we have all experienced in having with us one of North Carolina's most distinguished publicists and a thoughtful student of the business, professional, and social life of the State, to discuss this important subject. Years ago we came to the annual sessions of the State Medical Society and we discussed technical papers in a technical manner only. We are changing with the times, and with that change we are including the public, and our influence as a profession and as individuals is growing stronger. It is a happy sign when men like this speaker come before us and take part in our discussions.

I move that this society has heard with pleasure and appreciation the address of the Hon. J. W. Bailey, and that a rising vote of thanks be extended to him.

Motion seconded and carried by a rising vote.

THE AUTOSEROTHERAPY OF PELLAGRA.*

Dr. Edward J. Wood, Wilmington.

In the *Journal A. M. A.* for May 8, 1915, E. E. Palmer and W. L. Secor of Texas recommend this plan of treatment. We have used it in Wilmington very extensively, and our results have been as strikingly favorable as the writers'. We modified the treatment in giving more of the serum at shorter intervals, but there must be more experimental work done before we can decide these points of detail. It would appear that

*Abstract of address before State Medical Society.

in very grave cases the results were not good or were not permanent; it may be that the treatment actually did harm, but in the ordinary case the improvement was immediate and striking.

The blister is made on any unhairy portion of the body, preferably over the manubrium sterni, with a cantharides blister plaster about 1½ inches square. It is left on until the blister forms. The edge of the plaster is carefully removed and the surface of the blister touched with tincture of iodine and the contents removed with the hypodermic syringe. It is injected subcutaneously into the arm in the usual manner.

CHEMISTRY OF PATENT MEDICINES.

Prof. E. V. Howell, Chapel Hill.

(Note.—Prof. E. V. Howell, dean of the Department of Pharmacy at the University of North Carolina, was invited to participate in the Symposium on Narcotics and Patent Medicines. His address was listened to with profound interest. In his discussion, Professor Howell expanded in a most interesting way, giving definite data on the following topics.)

REFORMS IN MEDICINE.

1. Education and publicity in regard to so-called "patent medicines," advertised to the public.

2. On the use, without investigation, of the numerous patent medicines advertised to the physicians exclusively.

3. To the suppression of advertising of doubtful or injurious remedies.

4. To the State's duty to inspect its medicines for human beings, as well as its cattle, poultry, and plant foods.

5. To devise some means to legally reach those outsiders who, by diagnosis blanks and remedies furnished, are practicing medicine in our State without preparation or license.

6. To the particular investigation of drug habits treated with remedies containing dope made up to fit the particular case.

7. To the harm done, in the public mind, by premature, spectacular, and exaggerated announcements of cures, specifics, etc.

8. To volunteer the assurance of aid from the pharmacists in this work of our State Board of Health and the American Medical Association.

SHOULD THE RELIGIOUS PRESS AID AND ABET IN SELLING PATENT MEDICINES AND OTHER NARCOTICS?

Dr. J. T. J. Battle, Greensboro.

For the Medical Society of North Carolina to discuss the question as to whether or not the religious press of the State is keeping within, not its legal, but its moral right as to its advertising columns is certainly out of the ordinary; and for it to be brought up at all is an intimation that the press is taking money for something that is of no benefit to its readers, and possibly harmful.

To be more specific, it is a matter of serious regret that so many denominational papers should continue to advertise nostrums of every description. This regret is intensified when it is realized that so many of the secular magazines have discontinued them, and many of these, such as *Harper's Weekly* and *Collier's,* have started crusades against the sale of them.

When the secular magazines take the lead in a moral movement which is purely for the good of the people, and quite often against the financial interests of the magazines, it is a reflection upon the religious periodicals, as the latter are expected to be in the front rank in every work the object of which is the uplift of the citizenship of the State.

Every religious periodical in this State is owned very largely if not exclusively by ministers; if not owned, they are edited by them; and in the columns of too many of these papers are patent medicine advertisements which are misleading and which are doing much harm to the people who take such medicines. The owners of these papers know that this is the case; and not one of the editors or ministers connected with them would go in the pulpit or upon any platform and recommend publicly the taking of these nostrums, nor could they be bought at any price to recommend from the pulpit that they should be taken. Yet they are carrying these advertisements, and carrying them because of the money that is in them. In many families in this State the church paper is read more religiously than the Bible itself, and in the country where the daily paper is not taken every advertisement even is read. The editors undoubtedly want the people to believe what they have said along religious lines, and if the real truth was known they do not want them to believe what is said in their advertisements. This is what might be termed left-handed religion.

The columns of the religious papers are regarded by a great many people, who believe in the "old-time religion," as more or less sacred; and they read the advertisements without taking them even with a "grain of salt." Fakers are aware of this fact, and that is the reason they are willing to pay high advertising rates.

If the editors of the religious press realized that they are directly responsible for making dope fiends out of some of their subscribers, when their real object is to make them better church members, it would be calculated to make them consider well before subsidizing their space. The average reading man puts a "?" after most of the reading matter he sees in the daily papers, and awaits confirmation; but not so with the average subscriber to the church paper, who has all confidence in whatever he reads in its columns. He has not been called upon to grapple with and weigh the many conflicting news items and misleading advertisements found in so many papers. The daily press, which practically admits that its columns are subsidized—as in a recent controversy it admitted that it would not criticise its advertisers—is fast approaching a time when it also will eliminate all advertisements of doubtful or questionable good.

As the vascular system of an individual distributes the blood to the entire body, so the press of the State distributes the news over the entire field. When it comes into the home of the credulous church member, he sees no difference in the statements made in the reading and in the advertising columns; he reads them all, believes them all, and acts accordingly, for it is doubtless true that the best written advertisement sells the most medicine. The medicines are gotten up for the purpose of selling, and not for benefiting humanity primarily. The ingredients and the preparation are withheld from the public, for if these were given out it would demonstrate that the claims made were not true. If some physician who has made a failure in practice has resorted to this means of deceiving the public, he will give more attention to and pay more money for the advertisement than for the compounding of the drugs.

Some of the religious papers have sold their entire advertising space to a syndicate, sometimes possibly in another State, and it is really more or less out of their control; so that when the following quotation is seen following an advertisement:

> "NOTE.—The Advertising Manager of the_____is personally acquainted with_____. You run *no risk whatever* in accepting his offer. I have *personally witnessed* the remarkable curative power of this_____in a very serious case."

it is for the purpose of making the reader believe that the advertising manager of the paper is referred to, while the truth is that it is the advertising manager of the syndicate who has bought the columns. It is misleading, and it is intended to be. The shrewdness of this advertisement is seen only when carefully read, as it shifts from the third person to the first person.

The average man who takes a religious paper—and it may be possibly the only paper which enters his home—believes what he sees in it. He is enticed into buying medicines, his money is wasted, and when no good is done it might be well for him to learn by experience; but too often real harm is done. Every one must admit that patent medicines are made for the money that is in them. Very fortunately, many of them do no harm, as the ingredients are worthless and have no effect; others have a habit-forming drug in them made for the purpose of causing a habit so that the sale may continue; others are really harmful.

It might not be out of place to call attention to some astounding statements made by this class of commercial adventurers. In looking over the columns of a religious paper, and reading the advertisements, I see that they guarantee to cure every known disease. One will use a liquid, which will give "blessed relief in five minutes"—"put an end to stomach trouble forever by getting a large fifty-cent case of_____." Another will use a powder, curing the same symptoms, but not in so short a time. Another will use tablets, which will make you "beautiful, and correct digestion," will digest food "better than your own stomach can do it." One specimen of water will renew the system in three weeks, giving you an entirely new body.

Some papers of the State have already thrown these advertisements overboard, and refuse to allow communications of such doubtful nature to have any space in their columns. Their influence is more wholesome and religious. All honor to them.

May the day soon dawn, if it has not already done so, when the entire religious press will be on the firing line, using every effort to save its readers not only from useless expense, but from possible danger arising from the indiscriminate use of patent medicines. It is a duty it owes to its followers; and when these advertisements are discontinued it will stand upon a higher plane, and be of greater service, and will be more loyal to the God it professes, rather than in the present position of serving two masters.

SHOULD NORTH CAROLINA SEND HER DRUG HABITUÉS TO THE CHAIN-GANG OR GIVE THEM HUMANE TREATMENT?

WILLIAM M. JONES, M.D., GREENSBORO.

I was once present at a vaudeville show in which the comedian responded to a very peculiar name, and when being questioned as to who gave him such a name, made the reply that nobody had given it to him, but that it had been wished on him. So it is with me and my subject; it has been wished on me. Why, I cannot say, and I fear you will not have the solution when I have finished.

North Carolina cannot send her drug habitués to the chain-gang. Where is the law for such action? I will admit that we have some queer laws, but I do not think that we yet have on our statute books a law providing that a drug habitué can be sent to the chain-gang for the habit *per se*, and, on the other hand, we do not have a statute stating that he cannot be sent. The drug habitués of the chain-gang are unfortunates who have come under the heavy hand of the law for some crime committed. The law does not excuse a man who commits a crime when under the influence of whiskey, and it cannot make an exception of other drugs. When these cases come before our courts they come charged with having committed a crime, and, if found guilty, they are sentenced according to the law for their particular offense. There are a few exceptions, where the fact has been clearly shown that the case is one of drug addiction, when the court in its discretion may modify the sentence.

This individual cannot be turned loose upon society. He cannot be allowed his freedom and given the opportunity of repeating his offense, but must be handled in such a way that he cannot injure innocent subjects or violate the laws of the land. He cannot be sent to the hospital for the criminal insane, for these hospitals are always full, and besides, a drug habitué is not what might be termed a *bona fide* case of insanity, but is the victim of a habit, which habit has been the cause of a mental and oftentimes a physical departure from the normal. He cannot be sent to a private hospital, for there is no provision made for keeping him under control, were it otherwise possible to send him there. The court is face to face with a situation, and this must be met. What solution shall it make of the situation and how shall it decide the question? Either by freedom, with or without bond; by suspended judgment, the

payment of a fine, or by a sentence to the jail, workhouse, or county roads. To give him his freedom is only suspending the inevitable, for sooner or later, and generally sooner, he is again before the bar of justice.

In my limited experience with drug habitués who have been sentenced to the roads, and were I compelled to base my conclusions upon this limited experience, I would unhesitatingly say that the county roads is the place for these cases. They certainly get relieved of their habits, provided their sentence is of sufficient length, and these cases do receive humane treatment. Is it reasonable to suppose that because a man is down and out and a convict that he will not receive humane treatment from the medical profession of North Carolina? For, if he does not receive it, but, on the other hand, gets inhumane treatment, it is the fault of some physician, for these cases are under our care and protection during the time they are working for the State.

Results can be obtained on the county roads, and results that are as lasting and permanent as would be received in an institution at an enormous expense to the State or the individual. I realize the fact that the outlook would be far more inviting for the drug habitué when convicted had we beautiful and elaborate buildings surrounded by large and commodious grounds, the buildings having tiled walls and marbled floors, libraries full of the latest and best magazines, lounging rooms with masterpieces of art upon the walls, and morocco upholstered reclining chairs, with hot and cold baths upon every floor, both shower and tub, and the tubs made of pearl; where meals were served to meet the most fastidious appetites, upon silver waiters, by full liveried attendants—in fact, a place where the inmates could just rest, rest, and enjoy themselves. We would not have to wait long to have such an institution full and keep it so, and of course we would never have any cases to relapse and come back to such a place.

But what now is the outlook, seriously and honestly, to the convicted drug fiend? He has the necessities of life and not the luxuries when on the county roads. He is fed a plain, well balanced ration; is given systematic employment for the exercise of his muscles, so that he needs no tonic in the way of a stomachic for increasing his appetite. He has regular hours for his meals, for work, for rest, and for sleep. Each case is cared for as to his drug as an individual, and certainly not as a class.

This work or business of being a convict is certainly not what a normal individual would aspire to, but if you are going to sentence them—and you must sentence them in order to control them—it does not make much difference one way or another as to where they serve

their sentence. One man will say that to place them with the regular criminals you will make him a criminal, and another will say that as he improves in physical stamina he will improve morally and will exert a favorable influence over his fellows. So there you are.

To control an unfavorable condition you must first ascertain the cause or causes, and once this has been clearly understood a long step forward has been made towards a final solution of the problem.

These drug habitués are victims, yea, more than victims. They are both slaves and victims. But they are not such from choice, nor are they what they are from luxury, but are results of circumstances. There has been in almost every case one or more contributory causes; for, and with many, this cause has been due to some genuine pathological condition and frequently followed a major or minor surgical operation. Following such operation it has been necessary for the surgeon to give some form of opium. This has, of course, produced the effect, that of allaying pain and producing sleep, the two conditions most desired by the patient. In a few days the physician or surgeon ordered the panacea discontinued, and the patient, who is far from a normal individual, both mentally and physically, and who, knowing the great surcease from pain and insomnia that he had obtained from the preparation, calls lustily and persistently, pleading on account of the pain—pain that is more imaginary than real, and which is greatly magnified by his weakened and subnormal brain—to be given the dose, that he may have only one more night in peace and quiet. This is not the exception, but the rule. Fortunately, a very large per cent of these cases cease calling for their potion; but some do not, and continue to call for and receive it as long as they are confined to bed or in the house or hospital, as the case may be. These cases then become one class of our drug habitués.

Then there is that class of cases in which the habit has fastened its fangs in a slow and very insidious manner, and, we might say, almost from accident, certainly on account of the ignorance of the individual. These are cases occurring in neurasthenic and hysterical women, in the majority of instances. They are cases wherein a physician has been hurriedly called, probably in the middle of the night, and has given a prescription containing opium or some of its alkaloids. This relieves the case. The next time one of the so-called attacks come on the individual resorts to the former prescription, and of course the spells increase in frequency and apparent severity, and as they become accustomed to the drug, more is required. In time the individual becomes a confirmed habitué. Then out of the kindness of her heart she recommends her cure-all to not only her neighbors, but to all of her friends,

acquaintances, and to some even whom she does not know. But these cases will be almost nil in the future, for the Federal Antinarcotic Law prevents the refilling of prescriptions, and without an original order from the physician she cannot now obtain the drug.

State and especially local county laws have not been able to handle the situation. There have been special laws as to the dispensing of opium and other narcotic drugs on our statute books that have not been complied with because the physicians have not been informed of the law. Then there are some laws that are so far from being in any way reasonable that they are absolutely ludicrous—laws daddied by some old maid who wears breeches and votes, and suckered by a sissy who wears skirts and also exercises indirectly the right of franchise—acts that clearly put the profession in disrepute and laws which attempt to say how much a physician shall prescribe of a certain preparation. But I see I am not sticking very close to my text, so I will call a halt and follow another line of cause.

I have now considered my own profession, and have endeavored to be honest in my presentation, viz., that many cases of drug addiction have been due to the carelessness of physicians; that the Federal law has called a stop to this, and is protecting the physician and the patient.

If you desire to obtain favor with a man, say something in praise of his dog; but if you want his everlasting condemnation, criticise his church or creed. Now, I have never knowingly criticised any church or creed, for I have ever felt that certainly in such matters every one should be left severely alone as to their opinions, for it is a question for each to decide by himself and for himself; so I am now not going to diverge from that which has been my custom; but I do want to have something to say of things of a religious nature in general.

We have all denominations and creeds. You pay your money and you take your choice. We boast of our high ideals, of our large and important memberships, and we fight for the kneelers at the mourner's bench. We erect large and magnificent edifices, have excellent music rendered by paid choirs with the assistance of expert musicians. The congregations and book membership of our churches are large. There is, of course, the necessity for a church magazine. Of this I do not question the fact, but I do seriously question the necessity for these magazines being made the goat and dumping ground of fake and quack advertising. The ads. in many of these church magazines are simply wolves in sheep's clothing, and simply because they appear in the church magazines to the unitiated every word is the truth. These magazines will refuse to carry a whiskey advertisement because it is whiskey, but

will solicit it under such a name as Peruna, and they not only solicit, but elders, deacons, wardens, stewards, and pillars of the church—yes, even the ministers—write testimonials stating, not in so many words certainly, yet nevertheless as emphatically, that they do not care for their whiskey straight, but prefer a few barks and herbs mixed with it and to pay about ten prices for the poor adulterated brand received. Why and wherefore are patent medicines? Are they on the market for suffering humanity? Yes—for those cases which are like a drowning man grasping at a straw. The secret in all is some drug that is either a stimulant or a narcotic, and which, of course, is habit-forming, so that one bottle calls for another, and thereby the coffers of the self-styled philanthropists are filled.

Were it possible for the shades of Ananias and Sapphira to return to earth and read some of these patent medicine advertisements in the religious press I am sure they would again fall down and give up the ghost, for the shock would be too great for even a shade to withstand. They would see that they were far surpassed and had lost all claim to the title for which they had thought themselves famous.

Here, then, is the past and the present recruiting station for the drug habitués, and will be the future unless something is done to stop it. The religious press, I do not think, means to be bad, but, on the other hand, it does not intend that the filthy lucre to be had from these advertisements shall slip through its fingers. The leading papers and periodicals of the secular press of today refuse to accept, not only patent medicine, but all fake advertising, and why not the religious press?

Here, then, are our causes, and here, also, are the results of these causes clamoring for their drug or demanding some relief from the severe suffering consequential to its withdrawal. Some are even criminal or become so in their effort to get their dope. What are you going to do with it? That's the question. My answer is, I do not know, unless you send them to the county roads and give them humane treatment.

Dr. G. T. Sikes, Grissom: Mr. President and members of the society, I do not expect to add anything new to what has been said in these papers, but I am exceedingly happy to mark the advancing information that is coming to the medical profession of North Carolina upon the subject of drugs. I see a very marked change since I have been a member of this society in the nature of the papers on this subject, and I might say more than that, but I will not. We are very glad that this information is coming to the medical profession. But it is necessary that it go farther than this. The fact that we know these things is a source of very

great consolation to us, and it places us in a position where we may be of very great service to mankind. But the fact that struck me while these gentlemen were reading their papers was that it might be very nice if we could devise some plan by which this information might be spread out over the country so that the laity might pick it up. If other people can pick up the information we have as to the painful effects of these drugs and alcohol, then we will be lauded in days to come for what we have done in our day and time; and while I do not know the proper plan, yet it does seem to me that there might be some way that some of these excellent papers might be published either in the newspapers or in pamphlet form and distributed to the laity over the country, in order that they might have an opportunity to see what the medical profession of North Carolina is doing and that they might see the marked advance upward of the great medical profession as they saw last year when this body put its foot down on the use of alcohol. They may see that in the future we are anxious to do even greater things, if they can comprehend what we are doing.

A STUDY OF SOME STATISTICS AND REPORTS OF THE INSTITUTIONS FOR THE INSANE.

Dr. Thomas M. Jordan, Raleigh.

That I may not be called upon to apologize for the message I am about to bring you, let me say in the outset that until recently doctors in annual convention have felt sufficient was their work when they had discussed the properties of some drug or instrument for the treatment of certain diseases, or had outlined the various and peculiar symptoms of disease and the application of remedies thereto; but I come to invite you into a new and larger field of endeavor, and through you to call to the attention of our fellow-citizens throughout our Commonwealth the work of the more economic handling of and the prevention of insanity.

I know there will be found among us those who will say, "Shoemaker, stick to your last," and there may be without our ranks those who will argue that enough for us is the duty of attending the sick, and the collection of our bills—the former a most worthy and the latter a most arduous work; but a large majority of the populace will bid us God-speed, and not a few among the number are looking to us to do such work, as you will readily infer from the following conversation. I asked a prominent lawyer not long since to answer the question, the relation

of the inebriate to the State and the State's duty to him, to which he replied by saying that that is more a question for the doctor than for the lawyer to solve. I do not agree with him unless he is willing to admit that the medical profession is more philanthropic than the legal profession, and because I think that lawyer reflected the opinion held by a great many is my reason for calling your attention to some statistics and facts showing the great need for this undertaking.

In discussing this subject I wish especially to emphasize the fact of increase in insanity in our State out of proportion to increase of population; to the enormous and increasing cost of caring for the insane, and the fact that in spite of both the increase of the insane and the larger expenditure in caring for the same, out of proportion, too, to the increase in the insane population, that our State is doing little or nothing to prevent insanity; notwithstanding the fact that as much as 50 per cent of the cases, due precaution having been used, might never have been.

The National Committee for Mental Hygiene says that the number of insane people in the United States exceeds the number of students in the colleges and universities of America, and it is also greater than the total number of officers and enlisted men in the United States Army, the Navy, and the Marine Corps. One-fourth of this number went crazy or were born crazy as the direct result of alcoholism. (Add to this number that other large per cent of insanity due to syphilis, and you will be safe in the position that 50 per cent of the cases are preventable.)

The cost of caring for the insane exceeds the cost of any other single item of expense in a State except for education, and it costs per capita $175 annually to care for the insane of the country. Insanity in the United States, as the result of alcoholism, costs $73,000,000 annually. These are the statistics of Government reports, and bear directly upon the question before us here in North Carolina.

But we must get nearer home. A study of the census for our State shows that for a decade the State had an increase of population of 16½ per cent. Studying the report of the State Hospital, Raleigh, N. C., for the same decade, we find an increase in population of that institution of not quite 200 per cent. Studying the report of State Hospital, Goldsboro, we find that in 1904 124 patients were received, that in 1914 311 were received, a gain of 187 patients, giving an increase of about 150 per cent for the tenth year over the first year of a given ten-year period.

On November 30, 1904, the population of the Morganton Hospital was 1,002. On November 30, 1914, ten years later, there was a population of 1,359, a gain of 357 patients, representing over 35½ per cent; and which most likely represents the real increase in the population of

our insane. But during the biennial term covered by the last report of that institution there were admitted 359 patients, while 328 failed of admission, a total of 687, or more than 50 per cent increase in the number remaining at the beginning of said biennial term. Now, I do not pretend to argue that any of these calculations give the true ratio of increase of our insane population, and I regret that at present we have no means of obtaining such information—it would seem there should be; but I cite these figures for the purpose of emphasizing the fact that it is manifest that there is a considerable and rapid increase of insanity in this State.

A study of the report of the State Treasurer and the acts of the General Assembly will reveal to you that the amount for the support of our insane has increased from year to year until now more than one-sixth of the State's net income is spent for the support of the insane, not to mention amounts for permanent improvements, the expenditure for support alone reaching the sum of $469,535 annually. In 1904 our expenditure for support was $259,530; and in 1914 $469,535, in ten years almost doubling the amount. If the 35½ per cent increase given in a decade for the Morganton Hospital is nearer the correct increase for the insane population of the State, then it would seem that the amount expended in the decade for support being nearly 100 per cent increase is out of proportion to increase of the insane population.

In introducing the subject before medical men, it is not that I think more of the duty of correcting these evils devolves upon them than upon the average citizen, but because, judging the future by the past, it is here I may expect more sympathetic listeners in an effort to bring about preventive legislation; for that will be the means through and by which these ends may be attained; and upon your brows, my fellows, should a wreath be placed for what statutes now exist upon our books for disease prevention; and it is to you we look for help to handle the man who by abuse of self transmits to posterity disease in the shape of insanity. It was not until the good year 1914 that doctors in convention assembled went on record against alcohol; and by that resolution we took a long step in placing our profession in the vanguard of those who know what life is and love their fellowman. May we at no distant day crown ourselves chiefest among ten thousand by standing together for statutes that would prevent the drunkard, the dope fiend, and the syphilitics from encumbering society with their defectives, filling our asylums with the insane, our prisons with criminals, and our almshouses with incompetents and invalids!

Even now in North Carolina, under the two quarts per month statute, in my limited practice, even this very week, I am consulted by a man who, though up and going about his business from day to day—and he has a good business—has soaked himself until now he tells me frequently that he is watched, that wherever he goes he is watched by different people. Now, all the time we have known that unless he abstained, this would be the inevitable; but we have had no statute by which he could be restrained. Again this week: another long-time combination whiskey, dope, and cigarette fiend, the father of more than a half-dozen children by a good woman, has acted so inhumanly toward those nearest and dearest to him that his wife asks confidential advice of her next best friends, the preacher and her physician; and yet there has been no law upon the statute books by which he might be restrained; prevented is our medical term, and it is a good term in these instances.

Let us get ourselves together for life protection. I hope to see our statutes carrying the command that whenever the syphilitic comes under our observation and treatment his case shall be accorded the same notoriety as the man with smallpox or the child with scarlet fever, for he is a thousandfold more a menace to the community, to life, and to all that goes to better mankind. If not tagged with the quarantine card as in diseases mentioned, doctors should be required to report to a county record such cases, and before such person shall be permitted to further propagate his kind he should be required to produce a certificate that he has been cured. And so with the dope or whiskey fiend; before they may go unrestrained again, let some recorded authority be given them. Dealing openly and directly with such cases is the only means of completely eradicating them. Let those who commit the acts be the disgraced, and not their posterity. The day has passed when the doctor can wink at, and not condemn, the young man when he goes astray. By such a course only can we hope to remedy these evils.

This is not too much to expect the noblest profession among mankind to stand for, to work for, and to achieve; and when achieved the problem of increasing insanity, increased cost of caring for same, will then be solved.

PREVENTION OF INSANITY BY THE PROPER TREATMENT OF WHISKEY AND DRUG HABITUES.

Dr. Albert Anderson.

We have a large crop of people so naturally endowed and so nurtured by the effects of whiskey and drugs that we must recognize the problem of heredity and solve it in every possible way if we expect to eradicate or modify these avoidable causes of insanity.

Our parents and grandparents were reared at a time when it was the polite custom universally observed to treat their friends with the delicious mint julep in their homes and vie with each other in hospitality in the barroom. These customs have produced a large per cent of our hospital population today, through heredity. These customs in the South are no longer in vogue, and their decay seems to be spreading with astonishing rapidity not only in this country, but wherever full efficiency must be had in service of war or peace. Whiskey or its equivalent, and opium or its equivalent, are done to the death overnight, as may be illustrated in Russia and China. After their total abolition it will take generations to remove the last vestige of this hereditary cause of insanity; but after one generation its good effects will be pronounced as proven in those States which have had prohibition for a generation.

The patients admitted to our hospitals suffering from the use or abuse of alcohol are drunkards who get well or return to an apparent normal condition when they get sober. This class of patients from the direct influence of whiskey are few compared to those types of insanity whose drinking is only an expression of a psychopathic constitution that finally develops into dementia præcox, manic-depressive insanity, epilepsy, the feeble-minded, etc. The free use of whiskey by former generations has produced a generation with a weakened nervous system, whose nervous constitution is so frail that it succumbs to the slightest strain brought about by disappointment, hard work, worry, insomnia, and of the strenuous life of modern society and business competition.

For the treatment of the whiskey class who cannot be controlled outside of an institution I understand the Belgian plan is feasible and works well. It is this: The chronic alcoholics are colonized and made to support not only themselves, but another class of dependents, namely, the pauper tubercular class. This segregation will prevent offspring with inherited natures for the above diseases and at the same time afford a living for the indigent tubercular.

Sterilization or the prevention of marriage will be hard to enforce until that educational day shall come when all the people will know what only the alienists now know, namely, that whiskey drinking produces a condition in parents that transmits psychopathic natures or traits in children we find among our epileptics, feeble-minded, and various types of insanity. When these traits are inherited, whatever is done to prevent must be done during the early years—a period over which ignorance has hitherto ruled in the home, in the school, and in society. These delinquents must be found early to eradicate or modify these congenital tendencies during the formative period of early childhood.

Enough has been determined to lead us to find these children in families whose parents beget offspring naturally endowed with qualities which science teaches us to expect. Every seed brings forth its kind; but it is possible to change every type by education, and this is our only hope. What has been said of whiskey drinkers can be largely affirmed of drug habitués. The habit itself indicates in a large majority of cases a defective psychopathic constitution, and unless discovered in early childhood and educated with the knowledge of eradicating and modifying these traits of nature, they will grow to be misfits in homes, schools, and society life. When they have grown to years of physical maturity and have the freedom as well as the responsibility of citizenship, they will run into excesses or an irregular life—drinking, taking drugs, and giving free rein to their passions.

They are incapable of adjusting themselves to the demands of business, to social requirements, or to a moral life. This class must be controlled for the safety of themselves and society.

The eugenic department of the New Jersey State Village for Epileptics, at Skillman, gives seven hundred and sixty case histories of epileptics whose heredity has been traced. Four hundred and fourteen of these cases show alcoholism in their ancestry. In two hundred and forty-seven of these cases the alcoholism was in one or both parents.

General practitioners should now note the fact that opium habitués begin the habit by taking morphine to relieve periodic pains of neuralgia, tabes, dysmenorrhœa, rheumatism, etc., or the mental depression incident to worry, loss of position, grief, and the like. A great many cases are unfortunately traced to the carelessness of physicians in prescribing the drug, and as if in retribution the medical men furnish the largest quota of the sufferers (15 per cent).

As the underlying cause of the majority of our hospital drug cases is a neuropathic diathesis, isolation is more important than keeping the whiskey drinkers in an institution for a long time, not only for elimi-

nating the effects of the drug, but doing as much as possible in correcting the diathesis by building up the physical health and reëducating the mental and moral faculties.

Cocaine users are increasing rapidly. The drug is frequently tried as a substitute for morphine. It is also frequently used in dentistry, surgery, throat trouble, and patent medicines. From these sources a knowledge of its analgesic effects is obtained, and its use is becoming more or less general. Isolation is necessary for these patients. The prognosis, if withdrawn, is good, but relapses are pretty apt to occur.

In a paper of this kind I can only mention a list of drugs in everyday use that may produce mental disturbance from the effects of habituation, namely, chloral, cannabis indica, somnol, sulfonal, paraldehyde, ether, chloroform, aspirin, antipyrine, phenacetin, trional, chloralamid, iodoform, belladonna, hyoscyamus, salicylic acid, quinine, the preparations of lead, arsenic, and mercury, and the bromides. Permit me to quote Dr. William A. White, of the Government Hospital for the Insane in Washington, D. C., on the possibilities of these common drugs in producing a psychosis: It should be realized that many of these drugs are drugs in common use, and that unless the possibilities of their producing a psychosis are borne in mind, such an accident may arise as the result of large doses or even of moderate doses in especially susceptible persons. It is just such cases as these, together with the cases that arise as the result of taking several drugs, analgesics, and hypnotics, that one meets and finds that no suspicion has arisen as to the true cause of the trouble. Attention has recently been called to the frequency of bromide delirium (O'Malley and Franz, Casamajor). Casamajor has called particular attention to the frequency with which bromide delirium is produced in the treatment of alcoholism.

The character of the delirium in these cases may be described as dream-like. The content of the delirious experiences reminds one of delirium tremens, while the tendency to confabulation reminds one of Korsakoff's psychosis. The patients are not usually apprehensive and restless as in delirium tremens, but more composed, and may be dull and stupid, though there are not infrequently outbreaks of violence, dependent upon paranoid experiences. The following extracts from cases will illustrate these points:

The patient, a woman, 36, had been taking morphine hypodermically and bromides, chloral, and hyoscin hydrobromate. On admission she sees men in rubber garb who stay in the water and look at her constantly. She also sees the king and queen, bugs and snakes, and bulldogs with huge open mouths. Says the king and queen congratulated her when she

picked up the broken glass at F's on Ninth Street. She hears bulldogs scream and answers imaginary voices. Electricity is played on her by Dr. B—, and she feels snakes which crawl about her neck. Says there are men who throw green powder about her room.

Another patient, woman, at 38, had been taking antirheumatic treatment with aspirin to relieve pain, and later morphine and hyoscin. She related the following delirious experience that occurred just before admission:

"I believed that a party of us were going down in the country on a picnic and that a cavalry regiment had been ordered out. When we got started, we found that a whole regiment of Indians and negroes were following us. We went to the place in the country where I was born and brought up, and there we found a hospital which was to be used for caring for us until the negroes and Indians were allowed to kill us. The patients in the hospital were all in little beds just like at Providence, but were all sitting up. The doors were locked so that we could not get out, but I could hear the negroes and Indians talking about killing us. They decided to divide the party up and take us to their different camps. They also talked of blowing the hospital up with dynamite. They talked of setting fire to a haystack that was situated near my mother's home. I heard them preparing fuse which was to be used in exploding the dynamite. I was dreadfully afraid all the time I was at Providence Hospital, and felt that I was among enemies. I thought the nurses were trying to do the best they could for me, but that they were in the employ of the Indians and negroes."

Another patient, female, 37, took "bromo-quinine" for two weeks, when she developed a delirium. The following is the substance of a letter she wrote while suffering from the delirioid experience: "Just go there; I cannot talk; I am under a terrible spell. I do not know what it is, but it is the most wonderful experience I ever had. I am hypo, I am hypnotized. I may be in a trance for three months. Do not, for God's sake, bury me alive, Molly. Keep me out of the grave for four or five months. It will be all right. You will hear some things that will surprise you. Ben, go in that room, for God's sake; there is a man in there; he scares everybody dumb. I cannot talk, but for God's sake, break down that door. Take Jack; he has got a good strong arm; break that door down. That poor man is suffering; I saw him do something terrible, and it awed me so I am half paralyzed. For God's sake, break that door down; hurry up."

In a case of bromide delirium (reported by O'Malley and Franz) the patient had taken on an average 300 grains of bromide daily for fifteen

days. Her case illustrates well the dream-like character of the hallucinatory and delusional experiences. She was disoriented on admission. Three days later said she had spent the night in the city, with a large crowd of men and women; that her husband was dead and that she had seen his body buried. The next day, asked where she had been the night before, said: "I was over to the gipsy camp; I went over in northeast Washington and saw them kill my husband—smash his head; his brother, who is a sculptor, made a form of his head; I saw it; he will be buried tomorrow." A few minutes later her husband visited her. She told him she thought he was dead, took him to task severely for putting her in the hospital and being unkind to her, but throughout the visit insisted that he had been killed. Six days after admission she still had visual hallucinations; saw cats and rabbits; thought some of the women patients were men; thought she had to walk on cats' heads when she left her bed and that the physicians were watching her from the register plate in her room. Later she complained that she was "spirited away every night by some influence."

In the treatment of these cases the principal thing is, of course, the removal of the drug, though often the underlying condition, for which the drug was taken—pain, insomnia—must then be treated. It must be borne in mind that it may take several weeks for the patient to clear up after all drugs are discontinued.

On motion of Dr. F. R. Harris, of Henderson, all the papers in the Symposium on Narcotics were referred to the Committee on Publication, it being left to their discretion to have any or all of them published in the press for the benefit of the public.

MATERIA MEDICA AND THERAPEUTICS.

THERAPEUTICS—OLD AND NEW.

R. A. Campbell, M.D., Junior Surgeon, Long's Sanatorium, Statesville, N. C.

Following distinguished precedent, we first seek a definition of therapeutics. At once the best and shortest definition I have found is: "The art of curing disease." Art is thus defined: "The employment of means to the accomplishment of some end; the skillful adaptation and application to some purpose or use of knowledge or power acquired from Nature; a system of rules and established methods to facilitate the performance of certain actions; familiarity with such principles and skill in applying them to an end or purpose, as of a practical, useful, or technical character, as opposed to *science*, which is 'systematized knowledge of any one department of mind or matter.'" There remains no doubt that the curing of disease is an art, and not a science, as many would have us believe. For, surely, if deprived of the knowledge and power acquired from Nature, we would indeed be poorly equipped for the battle against disease. Knowledge and power, acquired by countless thousands of experiments made by skillful investigators in laboratories and in the field; the skillful adaptation and application of such knowledge to some purpose or use—that is, the art of curing the disease. "The value o' the observation depends upon the application o' it."

When first began the art of curing disease is unknown—lost in the dim ages of the past. Historians of the early ages, as of the present day, give little space to the art of arts, yet are verbose in politics, philosophy, physics, war, religion, science, and art. Take up any history—so labeled—of the United States, and you will find chapters devoted to all the various kinds of human endeavor save that of medicine alone! Thus it was in the old days; consequently we have but fragments of the medical knowledge and teachings of the ancients, and no word at all of the beginning of an art that must have been nearly coincident with the beginning of the human race. Perhaps prehistoric man followed an instinct, as did his little more savage neighbors, the wild beasts. Perhaps he observed and followed the custom of the animals, and when ailing turned to certain herbs and grasses for relief. At any rate, when first we have knowledge of practitioners of medicine we find them

to be priests, witches, or conjurers. The most famous of the ancients, Hippocrates, the Greek, was born of a family of priests of Æsculapius, the god of health, in the first part of the fifth century B. C. The Greeks had previously laid disease to the anger of the gods—acts of Providence—as is done by many at the present day, more's the pity. Hippocrates broke away from the idea that disease was a divine punishment. He maintained that diseases sprang out of natural causes, that they could be studied, and that the body could be assisted in throwing them off. His descriptions of many of the diseases common to him and to us have never been bettered; but the remedies he used were crude, outlandish, and even horrible, from our standpoint. He it was that laid down the rule of days, which we hold to at the present day without knowledge of the reason therefor, thus: "The fourth day is the index of the seventh, the eighth of the beginning of the week following. But the eleventh day is to be considered, for it is the fourth day of another seventh. And again the seventeenth day is to be considered, being the fourth from the fourteenth and the seventh from the eleventh." He also said that "When medicine will not cure, incision must be made; if incision fail, we must resort to cauterizing; but if that will not do, we may judge the malady incurable."

Until recent years the treatment of disease or the application of remedies to disease rested upon that crude and unstable basis, the empirical system, which is founded upon or derived from experience, and even Hippocrates said: "Experiment is dangerous, experience fallacious, and judgment difficult." Yet upon this narrow and shaking foundation had the art rested for ages! Only within the last decade have we broadened and made firm the base upon which now rests the art of the treatment of disease. The old text-books attributed the origin of disease to many extraneous causes—bad air, exposure, improper diet, weak constitution, weather conditions, climate, inheritance, etc.; none to a special specific cause, the same the world over, irrespective of color, weather, social position, or what not. Yet it must be said of the ancients that on occasion they approached close to the cause, as when, in the days when Rome was the capital city of the world, a physician freed his community of malarial fever by draining all the marsh land. He thought the disease was caused by the night air being poisoned by the emanations from the swamp. His experience taught him that the cause lay in the swamp, but failed to tell him that the real carrier of the disease was the small and pesky mosquito, and not the harmless night air. Thus with many of the diseases flesh is heir to, experience led almost to the goal of success, but always the last and most important bit of knowl-

edge was hidden from even the most earnest seeker. Not until the power of the microscope to unveil the hidden mysteries was realized was the last barrier overridden. Even this was by accident. But from being a toy and curiosity the microscope became at once an instrument of precision and the greatest adjunct to the acquisition of knowledge of all the tools ever built by the hand of man.

The discovery that disease was due to certain specific causes—minute vegetable or animal growths and parasites, or the products of such, led to that first great advance in the treatment of disease, the *prevention* of disease, as illustrated by Jenner's discoveries concerning smallpox and Lister's aseptic and antiseptic measures to prevent wound infection. Perhaps each drew a lesson from that famous French army surgeon Parè, who saved so many lives by cauterizing amputation wounds. Again in this we see results from experience but half realized, and the true value almost lost, because the why was not discovered. The discovery of the cause of disease led first to the discovery of the cure of many of our most fatal maladies—smallpox, diphtheria, rabies, hospital gangrene. Further study of the causative factors of disease brought us to the present (or new) methods of treatment—the prevention of all diseases—not merely intelligent treatment by means of vaccines, serums, or antitoxins.

We all enthusiastically agree that the new method is worth a thousand—ten thousand—times the old to our Nation, our State, or community. Yet it is so new—some say unproven—that only a few of us have made any attempt to cure disease by using the preventive measures, so freely at our disposal. How many have initiated and enthusiastically followed up an active campaign against mosquitos, against flies, against filth and dirt in public places? How many have systematically pursued the deadly hookworm; have given the admonition, advice, and hygienic measures to be followed in a case of bronchitis, which may, if left alone, prove to be incipient tuberculosis! Incipient tuberculosis, which may be likened to the small blaze in a pile of waste paper in the basement of a building filled with inflammable material. Incipient now, but an uncontrollable, consuming fire if not at once stamped out. What is being done by the great army of general practitioners against that monster of destruction, typhoid fever? What physician but would rather prevent than try to treat to a successful conclusion a patient infected with the typhoid bacillus? The typhoid vaccine cannot be absolute, but it is so nearly so, its administration is not clouded by difficult or confusing technique, and, last of all, is furnished free and freely to him that asks. Then let us be up and doing, striving and contesting

with all our strength, one with the other—not, as heretofore, to overreach each other in the number of our patients, to outdo our rival in lucrative practice, or oust him from the position he holds in the estimation of the community as a practitioner, but to outdo him, if possible, in the laudable ambition of being the foremost advocate, adherent, and champion of the new therapeutics—that noblest art of all, the *prevention* of disease.

OCCUPATION AS A THERAPEUTIC AGENT.

Paul V. Anderson, M.D., Richmond, Va.

Years ago Dr. S. Weir Mitchell revolutionized the treatment of neurasthenia and allied conditions by advocating his "rest cure," which "cure" was adopted not only in this country, but practically all over the world. His mode of treatment involved, first, physical and psychic rest; second, hypernutrition; third, stimulation of metabolic processes, *i. e.*, by massage, passive movements, and electricity; and, fourth, the encouragement and education of the patient.

Although this treatment has proved wonderfully efficacious, yet many patients who have undergone it relapse on account of the fact that after such a long period of absolute rest they are soft and flabby physically and are unable to take up their work and keep well at home.

Radical departures from this line of treatment are now being advocated by many. From my experience with nervous exhaustion and allied conditions, and even with mental troubles themselves, I am more firmly convinced every day that rest followed by work is the sane method of treating such troubles. No rest is so perfect as that made possible by work under proper conditions. Both mind and body need work if health and happiness shall be obtained. The problem of obtaining the kind of occupation which means development and progress in cases of nervous exhaustion without overdoing is a difficult one, but it can be done if the problem is judiciously handled.

My interest was first aroused in work as a therapeutic agent while I was assistant physician at the State Hospital at Morganton, North Carolina. I was working especially with cases of dementia præcox at that time, and I found that many of these cases improved markedly and some got well when I was able to get them interested in work. I found then, as I have found since, that it is necessary to begin with the simplest task and gradually get into more difficult tasks as the patient develops. It is

important to give such work as the patient can do, no matter how simple this is, and it is exceedingly important that the patients shall work on something which they can complete. It is essential for them to see the completed product of their industry and to realize that the work is worth while.

In my work for the past three years I have found that my workshop and my occupation teacher have accomplished more for my patients than anything else. Especially good results have been obtained in neurasthenic, hysterical, and borderland mental cases, and even in mental cases themselves reëducative work has been invaluable. I can best illustrate the value of work as a therapeutic measure by giving a few reports of cases whose recovery, I believe, was largely due to the fact that they did things with the hands and thus forgot themselves and the many troubles which pestered their souls so grievously.

Case I: Mrs. F. A. had been confined to her bed for two years. She was exceedingly emaciated and anemic and was so excessively nervous that she would not allow any one to stay in her room except for a few minutes at the time. It was difficult to examine her properly, for she contended that she could not breathe if any one were near her. She also thought that her heart would fail if she made any exertion, and for this reason, as well as on account of her weakness, remained in bed. She was brought to us on a stretcher. Under forced feeding of milk and eggs she gained strength and three months after admission was able to sit up. After she was up for a few days she was put to work on a raffia basket, and in a short time she became so interested that she carried her work to bed with her and worked while in bed. Soon she was able to walk. She continued working right along; increasing her task as she grew stronger, and, in addition to basket work and brass work, raised a nice brood of chickens and was greatly interested in the flower garden. After a stay of eight months she went home well. Last summer I saw her mowing her lawn, and she told me that when the cook left she was able to do her own housework.

Case II: H. B. was a schoolgirl of eighteen whose parents were exceedingly neurotic. She broke down while preparing for her final examinations before graduation. Her physician attempted to give her absolute rest at a hospital at her home town, but he could not control her mother. As she grew worse and developed hallucinations of sight, and also an hysterical cough and hiccough, she was brought to us. On admission she was exceedingly thin and anemic. She was put to bed for two weeks and massage was given. She also took milk and eggs in abundance, finally taking twelve eggs a day. After she was able to be up she joined the occupation class and was soon quite an enthusiastic worker in reed, raffia, and brass, making many beautiful baskets and several brass and copper trays. As she gained strength she bowled, played tennis, and walked. Just before she went home she was walking five miles a day; had gained twenty-five pounds, and was absolutely well. She has continued her basket work and her walking at home, and recently wrote that she was feeling better than she had felt for years.

Case III: Miss A. C., a girl of eighteen, was frightened while at boarding school. She thought that she saw a negro man trying to enter her room. She became so wildly hysterical that it was necessary to remove her from the school, and she came to us. When she was met at the train she was markedly confused; could not walk, and there were marked convulsive movements of the arms, legs, and the head. On admission she was put to bed and a nurse was necessary day and night, as she was constantly seeing the negro man trying to come through the window, and, consequently, was attempting to get out of the room. For a week she was in a distressing condition, but gradually she became more quiet and rational. The trouble was then explained to her, and she rapidly grew better. (Apologies to the psychoanalyst!) As soon as she was able to be out she was put to exercising and working. She often said that the work was her salvation, for it kept her from thinking about herself; as long as she was busy she was all right, but when she was not occupied she was gravely depressed. After four months she was able to go home. She still continues her exercise and her work, having taken a supply of basket material with her. A report from her a week ago says that she continues to do well at home.

Case IV: Mrs. S. was a case of exophthalmic goitre, with excessively marked nervous symptoms. Complete rest in bed with massage and electricity worked wonders for her. When she was able to be up she began work in reed and raffia and took great delight in this work, saying that this did her a vast deal of good, for it kept her from thinking of her troubles. She was practically free from nervous symptoms when she left after a two months stay; had gained a great deal in weight and is now doing splendidly at home, where she continues to work on baskets.

Case V: Miss D. G. was a brilliant girl of eighteen who broke down while at school. Her father's family was markedly neurotic and there was a bad mental history in her mother's family. She had been upset at times for three years and had been at sanatoria in Switzerland, England, and America. She came to us from Phipps' clinic at Johns Hopkins with a diagnosis of dementia præcox, with a grave prognosis. The girl was greatly depressed, negative, deluded, and practically mute. For quite a while she was inaccessible, but finally she was interested in the poets; then in work. As soon as she began to do basket work and worked in the flower garden she improved markedly. She soon became a different girl; was happy and gay and wanted to work all the time. Five miles a day was her usual walk. After a stay of eleven months here, having gained thirty-five pounds, she left apparently well, and a recent report from Clifton Springs, New York, where her father has a cottage for her, states that she is working outdoors right along and is better than she has been in many years, if not in her whole life.

Case VI: Miss L. B. was a professor for twenty years in one of the leading schools of the South for women, and was a woman of unusual mentality, having spent several years in Germany in preparation for her work. She had a complete mental breakdown, due largely to overwork, and on admission was terribly run down physically and possessed of the most distressing and vile delusions and hallucinations. For quite a while it was impossible to get her to work, but by constant persistence she was persuaded to start on a basket. Her first work was done very slowly and was exceedingly poor and rough;

gradually, however, she became interested; her work improved; she began to talk less about herself and her delusions and hallucinations. Although her progress was exceedingly slow, she gained steadily. As she improved, she said that when she was occupied the voices did not trouble her nearly so much. Her physical condition improved as her mental condition improved, and she gained a great deal in weight. After eighteen months she went home absolutely well and now has taken up cooking and housekeeping, something she had never done before, in addition to her basket work which she continues. She also continues taking a five-mile walk each day, and stated in a recent letter that she felt better than she had in many, many years. This case for months seemed absolutely hopeless, and the patient herself attributes her recovery largely to the fact that she worked with her hands and was kept almost constantly employed.

Many cases might be reported, but I think I have given enough to show the value of employment in mental and nervous troubles. All of us would be better off if we could do something with our hands; chop wood, as did Gladstone, or dig in the ground. Outdoor exercise, and, if possible, real work, is the best of all remedies for poor digestion, insomnia, and many of the nervous ills to which Americans especially are so prone.

The best of all work, however, is that which is done with a purpose, and this should always be striven for, *i. e.*, work which makes flowers and vegetables grow, or work which beautifies and accomplishes some useful purpose, or brings forth some completed useful or beautiful object. The accomplishing of any task which produces a completed result which can be seen always gives pleasure.

Mr. Kipling expresses the gist of the matter when he tells us what will happen when we come to the end of things, and, although he expresses the desire to rest a while first, which all of us feel, yet he does not wish to rest always; and this, too, is true of all of us. Quoting him:

When Earth's last picture is painted and the tubes are twisted and dried,
When the oldest colors have faded, and the youngest critic has died,
We shall rest, and, faith, we shall need it—lie down for an æon or two,
Till the Master of All Good Workmen shall put us to work anew.

And those that were good shall be happy: they shall sit in a golden chair;
They shall splash at a ten-league canvas with brushes of comets' hair;
They shall find real saints to draw from—Magdalene, Peter, and Paul;
They shall work for an age at a sitting, and never be tired at all!

And only the Master shall praise us, and only the Master shall blame;
And no one shall work for money, and no one shall work for fame,
But each for the joy of the working, and each, in his separate star,
Shall draw the Thing as he sees It for the God of Things as They are!

HEART STIMULANTS AND TONICS.

Dr. W. P. Beall, Greensboro, N. C.

The heart is one of the most remarkable organs of the body. It is the only striped muscle entirely automatic and independent of the will. It maintains its action steadily and tirelessly through our allotted span of life, and ceases to beat only when its inherent reserve force is exhausted.

The most essential functions of the heart from the clinical point of view are contractility and tonicity, and underlying these, and controlling both, is that property of all striped muscle which enables it to respond to all reasonable calls made upon it, known as *Reserve Force.*

Dr. James MacKenzie says:

"Reserve force is the essential principle upon which diagnosis, prognosis, and treatment should be based. It is the premature exhaustion of this reserve which constitutes heart failure, and it is the heart's power to regain this reserve force on which recovery from heart failure depends."

The drugs used in treating a diseased or disordered heart are classed as tonics and stimulants, though there is no hard and fast line dividing them. First among the tonic drugs digitalis stands preëminent. MacKenzie says that when digitalis fails, he has never been able to find anything to take its place.

In proper doses digitalis causes the ventricle to beat more slowly, to dilate more completely in diastole, and to contract more forcibly and completely in systole. This causes the heart to empty itself more perfectly, thus improving the circulation. As the heart can rest only in diastole, the slowing of the heart rate permits more prolonged rest, and as the coronary arteries are filled during diastole, the heart must necessarily be nourished more efficiently by its increased blood supply.

It has been generally held that digitalis contracts the arterioles and raises blood pressure, but very recent experiments seem to throw doubt on this theory. It has been shown that digitalis leaves the blood stream within a very few minutes after its intravenous injection, and that it acts on the vessels only while it is in the circulating blood; in the next place, it is never present in the blood of patients in the concentration in which it was used in the experiments. From this it is claimed with some reasonable assurance that digitalis exerts no direct vascular action of any importance unless through the general improvement in the circulation.

Digitalis is absorbed slowly by the skin or mucous membrane, and still more slowly when given hypodermically, and its so-called cumulative action is probably only the accumulated effects of several doses.

Digitalis is indicated in almost all cases in which the tonicity of the heart is impaired, but is especially useful in acute affections of the organ. Opinions as to dosage vary greatly. While most authorities advise caution in its use, beginning with the minimum dose, a writer in a recent number of the *Journal of A. M. A.* says that in acute cardiac insufficiency the initial dose should be 1 drachm of a standardized tincture (which would represent about 6 grains of the leaf), and continued in 15 m. doses every four hours until some signs of its therapeutic action are obtained. This seems to be very heroic dosage, and not unattended with danger.

The symptoms of overaction of the drug are nausea and vomiting, diminished amount of urine, a tight band-like feeling around the head, occipital headache, with numbness and coldness of the extremities. The pulse drops to sixty or less per minute. After giving digitalis for some time do not allow patient to rise suddenly from the recumbent position, as sudden death might occur from heart paralysis.

Strophanthin was greatly lauded a few years ago as a heart tonic, but extended experience does not sustain the claims made for it. The preparations of the drug vary greatly in strength.

Houghton states that in testing four samples of tinctures physiologically, he found one ninety times as strong as the weakest, and more than twice as strong as either of the other specimens.

Given a reliable tincture, it acts well in cases of irritable heart with irregular beats, and under its use low blood pressure will improve.

It is said that in emergencies of serious cardiac failure strophanthin intravenously or intramuscularly has apparently saved life, as it acts very quickly. It cannot be safely repeated for twenty-four hours, but in that time much may be done in other ways to hold the patient safe.

Sparteine is also a member of the digitalis group, and is a valuable drug. It is useful because of its rapid action as compared with other members of this group. A half-hour after administration the pulse is markedly slower, in another half-hour arterial tension rises, and its effects last five or six hours. It gives greater force to the cardiac contractions, and increases the circulation in skin and kidneys. It is well suited for hypodermic use, being very soluble.

The dose should be from 1 to 3 grains every four to six hours, and as it has no cumulative action this dosage can be continued as long as required. Personally I have found it especially useful in typhoid fever and in the so-called typhoid conditions.

Caffeine is grouped with the heart tonics, though it is really more of a stimulant. It increases the frequency of the pulse, and seems to give a little more strength also. It does not slow a rapid heart, but will often stimulate a slow and sluggish heart. It should not be given in the evening, as it is likely to prevent sleep. The usual dose of the alkaloid is ½ grain to 1 grain, and of citrated caffeine 1½ grains to 3 grains.

It sometimes acts well where digitalis fails, especially when patient is stupid or apathetic.

Strychnine is used probably more than any other drug in heart affections, and with little discrimination. The claims for and against it are most conflicting. It is vaunted by many as the best emergency stimulant, and by many others it is constantly used as a cardiac tonic, and it is held in high repute. Other very competent clinicians hold that its effect upon the heart is only incidental.

Dr. MacKenzie says:

"I have carefully sought for its special effect upon the heart, and found none. I found that the evidence for its good effect was practically all clinical, and clinical evidence endows the drug with the most diverse properties. It is recommended as a cardiac stimulant in slow-acting hearts, and even in heart block is said to quicken the beat. It is said to be beneficial in cases of low blood pressure, and equally beneficial in cases of high tension, and even in Angina Pectoris. The evidence that can show a drug to possess the property of exciting the sluggish and of soothing the excited heart, of raising the low pressure and relieving the high, speaks more for unreasoning faith in the drug than for the beneficial properties of the drug itself."

Prof. W. E. Dixon, in an address before a section of the British Medical Association in 1909, said:

"Strychnine is still employed on the supposition that it excites the heart to increased activity. It has no direct stimulant action on the heart; by exciting the vaso-motor center it may slightly increase vaso-motor activity indirectly, but it should never be put in the same category with digitalis and other cardiac drugs."

Professor Osborne of Yale says:

"Strychnine is a much overused drug. It is now given for almost everything, and during almost every disease. It is *true* that the administration of strychnine is largely due to the evolution of the age in which we are now living. We have ceased to bleed and purge and sweat; we have ceased to starve the patient too long; we have ceased to load him with alcohol to the point of circulatory prostration, but brace him from start to finish. Strychnine is the drug that is being used for this purpose, and overused."

Nevertheless, strychnine seems to be indicated when the heart is acting sluggishly and the contractions seem incomplete, especially when digi-

talis is contra-indicated, or is not acting perfectly. In the latter condition small doses of strychnine will aid the action of digitalis. It is said to be especially useful in fatty heart.

Iron is valuable as a heart tonic, not because of any direct action on the organ, but by improving the condition of the blood the heart muscle is better nourished and strengthened.

HEART STIMULANTS.

A cardiac stimulant is a drug that makes the heart beat more strongly, and renders the pulse more normal in frequency. But it does not leave the heart any better than it found it; it is not a cardiac tonic.

The principal heart stimulants are camphor, alcohol, and ammonia, and of these camphor is probably the best. It acts quickly, stimulating the brain centers and dilating the arterioles. No depression follows its use in carefully regulated doses, though excessive doses will cause sleeplessness. It can be given by stomach in solution, or hypodermically dissolved in sterile oil. It is advised not to give it to children, as it is not well borne.

Alcohol is a vaso-dilator, and in cases of high blood pressure with laboring heart it gives relief by lessening the labor of the heart, but its effect in safe dosage is transient and it must be repeated at short intervals. Its value in diseases of the heart is limited.

Ammonia, preferably in the form of the aromatic spirits, is a quickly acting stimulant, with little after depression, and is valuable as an emergency remedy; for continued stimulation camphor is preferable.

The nitrites are also vaso-dilators, and under appropriate conditions are valuable cardiac stimulants. Nothing can take the place of Amyl Nitrite in Angina Pectoris, and when the skin is cold and pallid, and the heart is laboring, nitroglycerin in solution is very useful, flushing the face and making the pulse fuller and stronger. It is eliminated rapidly, and must be given every hour or two to maintain its effects. It is dangerous in broken compensation or myocardial degeneration.

There are a few other drugs that may be classed as emergency stimulants. Such are ergot, adrenalin, pituitrin, atropin, and morphine.

Ergot hypodermically is said to be very valuable in cases of low blood pressure with venous stasis, pulmonary congestion, and a laboring, failing heart. It causes contraction of the blood vessels, and seems to give tone to the heart.

The caution is given not to overdo administration, as there is danger of throwing too much strain on the heart muscle.

Adrenalin and pituitrin raise blood pressure, and are useful when pressure is low. Adrenalin is best given hypodermically or by absorption under the tongue; do not give by the stomach. Pituitrin is given hypodermically. The dose of either should be small, and should not be repeated oftener than every four to six hours.

Atropin may sometimes be used to advantage in case of great cardiac weakness. Like strychnine, it will whip up a flagging heart, but it soon ceases to be of value. It is best given hypodermically in small doses, not repeated for several hours, and if it causes excessive dryness of mouth and throat, much flushing or cerebral excitement, do not continue its use. Morphine in a small dose, as $\frac{1}{12}$ grain to $\frac{1}{8}$ grain, combined with atropin, seems to assist in quieting and bracing a weak heart, especially when there is cardiac pain and sleeplessness.

But by far the most valuable of all heart tonics is *rest*. If exhaustion of reserve force is the essential factor in heart failure, then its restoration must be the aim of all treatment. We cannot expect to restore a crippled valve, a calcareous artery, or a diseased heart muscle to a normal condition by any treatment whatever; and we can only make the best of what is left. If we can put the heart into position to regain its reserve force, we have adopted the only rational treatment. If the condition is acute or severe, prolonged rest in bed is imperative.

As the heart is more nearly at rest during sleep than at any other time, see that the patient gets plenty of sleep. A warm sponge bath, or a glass of hot milk, at bedtime may be sufficient. If not, try veronal, or a small dose of chloral hydrate combined with bromides, or a small dose of morphine with atropin.

As the patient improves try to impress upon him the urgent necessity of continued rest and freedom from excitement. In other words, have him continue the use of the best heart tonic.

I have tried, as briefly as possible, to epitomize our present knowledge of heart stimulants and tonics; not to give the results of personal experience, which is negligible, but the opinions of teachers and specialists who have earned the right to be heard.

My excuse for selecting this time-worn subject is that whether we are surgeons, specialists, or general practitioners, we must all watch the heart of every patient, and respond promptly to its call for help if we would keep our mortality rate within a creditable limit.

Solomon, the wisest man who has written, advises us to "Keep the heart with all diligence, for out of it are the issues of life," and who of us can gainsay his advice?

HAVE ALCOHOLICS A PLACE IN MEDICAL THERAPEUTICS?

Dr. J. F. McKay, Buie's Creek, N. C.

In selecting this subject for a paper before this society, the writer did so with some misgivings. It is a question about which many honest medical men disagree, nor is the subject always approached with a calm and dispassionate mind or charity for the opinions of others. In expressing my convictions on this subject at a time when hysteria on the subject of alcohol, both in the profession and among the laity, is so rampant, the writer, although he has neither the zeal and fanaticism of a crusader, nor the courage of a gladiator, feels like exclaiming, "We about to die, salute you."

At the meeting of the North Carolina Medical Society in Raleigh last year our retiring president in his address took a very radical position on the prescribing of alcoholics. The society also passed resolutions against the prescribing of alcoholics, copies of which have doubtless been furnished you all by the North Carolina Board of Health. In view of the wide publicity which has been given by the press of the State to the address and the resolutions passed by the Medical Society, and as the Board of Health has seen fit to circulate them, I think a word on the other side not amiss.

The first resolution reads:

"That the Medical Society of the State of North Carolina will use its best efforts to discourage the use of alcohol in any form as a beverage."

Against this resolution the writer has nothing to say. That the habitual use of alcohol in its various forms as a beverage by persons in health is an unmitigated evil, I admit. That its effect both on the individual and posterity are bad and far-reaching the writer also admits. That it is one of the causes of idiocy, insanity, epilepsy, crime, poverty, and degeneracy all thoughtful men concede.

The second resolution reads:

"That it is the sense of this society that any member of the profession who does promiscuous or unnecessary prescribing of whiskey, either to patients or nonpatients, is violating one of the principles of our profession, and is deserving of censure."

The writer is sure that every member of this society and every true physician in this State will most heartily indorse this resolution. That alcohol as a drug is being and may be abused by some medical men I think is true. The same may be said of such common and everyday drugs as calomel and quinine. There may be a few physicians who prescribe alcohol as a routine measure, without any clear idea as to its action, or the indications to be met, but the number is small. There may even be a few who so far forget their high calling as to prostitute it for gain, but the number must be very, very small.

The third and last resolution reads as follows:

"That alcohol as a drug can be eliminated from the Pharmacopeia without in any degree crippling the efficiency of the doctor's armamentarium."

Against this resolution the writer in all sincerity is compelled to protest. Against our president's views as a citizen or individual, or of those of the gentlemen who introduced the resolutions, I have nothing to say. But when the attempt is made to commit the Medical Society of the great State of North Carolina to any man's hobby or personal views, I must demur. That this third resolution represents the views of the great mass of the medical profession in North Carolina the writer does not believe. To take this question, with which pharmacologists and clinicians have been wrestling for the last fifty years, and settle it once for all by a resolution passed with very little or no consideration seems to be running amuck both as to science and experience. The writer does not believe that the Medical Society in passing this resolution regarded it any more seriously than they did the joke of our former president, that physicians be reëxamined every five years. By passing this resolution one of the by-laws of the society was disregarded, as this society does not stand as sponsor for the views or opinions of any one. The injection of this more or less political subject into this society was a mistake. It places the medical profession in the hypocritical position of saying that alcoholics have no place in medicine, and then stultifying themselves by prescribing them.

We are living in an age when everything must be regulated, and we have societies organized to promote everything from antivaccination, vegetarianism, and temperance to eugenics and trial marriages. If science and the experience of the world seem to controvert the conclusions of these fanatics, so much the worse for science and experience. Do these numerous societies do harm? I think not. So long as they do not attempt to put their theories into practice, they are harmless. Every one obsessed with one idea, or affected with a fixed delusion, can find one

that appeals to him, and it affords a safety valve for his surplus energy and a medium through which he can ventilate his theories.

This whole thing recalls to my mind a story that I read many years ago that happened out West. It was at the time when a certain political party set out to regulate the affairs of the universe. At a great political convention, when a long set of resolutions reciting many grievances and demands was about to be passed, a wag in the audience arose and moved to incorporate a resolution that the Government compel the manufacturers to place four legs on all pots! The question was put and passed unanimously!

But laying all facetiousness aside, have alcoholics a place in medical therapeutics? The writer has no hesitation in saying most emphatically that they have, and believes that his position will be indorsed by most of the conservative and thoughtful physicians.

In what I have to say, I refer to the use, and not the *abuse*, of alcoholics, when prescribed by a physician for a patient.

There is no drug in the whole materia medica about which pharmacologists and laboratory investigators have waged a more violent warfare. The combat has surged back and forth with crimination and recrimination and at times acrimonious debate.

Much of the confusion has arisen from regarding alcohol as a true heart stimulant, which it is not, yet under some conditions it may act as such. But this we know, that in any reasonable amount it is oxidized in the body, and to that extent it becomes a food, supplying heat and energy and preventing nitrogenous waste. Digitalis, strychnine, atropin, and adrenalin, valuable drugs as they are, cannot take the place of alcohol. Since the laboratory experimenters do not always agree among themselves, and clinicians do not agree with the laboratory men, where does truth lie? I think, somewhere between the extremes. Such men as Hare, Cushney, Pepper, and Tyson, than whom no men stand higher in the medical profession, give alcoholics a place in their works on therapeutics and practice.

The writer will not reflect on the intelligence of this society by attempting to enumerate the various diseases and conditions in which alcoholics seem to be indicated, but they are many.

Of the many local uses of alcohol, I will only mention a few. Diluted alcohol has more or less antiseptic action, and is a very useful drug in making many lotions and local applications for such conditions as bed sores, ulcers, fissured nipples, etc. Pure alcohol is most useful for massage purposes, and nothing is finer than diluted alcohol for sponging in high fever from any cause.

In the condition known as shock, alcohol is prescribed and with advantage. It is a good remedy in the condition of chill and in all acute internal congestions, as it does dilate the cutaneous blood vessels and brings the blood to the surface.

In cholera infantum or entero-colitis no drug is more valuable. Every physician knows that many children have been rescued from collapse and sustained through a tedious convalescence by alcohol.

In chronic suppurations and infections such as puerperal infection and diphtheria it is a life-saving drug. Also in pneumonia, both croupous and catarrhal, and especially in broncho-pneumonia in children, no drug is more valuable.

Of all the diseases in which alcohol is prescribed it seems to the writer that it is in fevers of a low and protracted type, such as typhoid fever, that it renders its greatest service. How many patients in the third, fourth, and fifth week of this exhausting disease have been kept alive and finally restored to health by this drug alone will never be known, but every physician knows that the number must be very large.

I but utter a truism when I say that alcohol is absolutely indispensable in modern pharmacy. Few indeed must be the number of physicians, even the most rabid temperance advocates, who would be willing to exchange our elegant and palatable elixirs and assayed tinctures and fluid extracts for the infusions and decoctions (dose wine-glass to teacupful) of our fathers and grandfathers.

The medical profession is a conservative body, as it should be, and will be guided by the old maxim, "Be not the first by whom the new is tried nor yet the last to lay the old aside." This subject may safely be left to the extremist, and in the meantime common-sense physicians will go on prescribing alcohol in cases where indicated with satisfaction to the doctor and benefit to the patient.

In closing this subject, I would say that the last word has not been said on the subject of alcohol, and while we all welcome progress with open minds, yet we realize that there is such a thing as being too previous even in medicine.

REST—THE MOST IMPORTANT SINGLE FACTOR IN THE TREATMENT OF TUBERCULOSIS.

LUCIUS B. MORSE, PHYSICIAN-IN-CHARGE, DR. MORSE'S SANATORIUM, HENDERSONVILLE, N. C.

The writer realizes that in choosing the above subject it may indeed appear to be a return to a discussion of fundamentals. This is exactly what it is. Had it not been for almost a crying need for a more widespread appreciation of this very elementary fact it would never have been chosen as the subject of this paper.

First, permit me to say most emphatically that there is no one agent in the treatment of tuberculosis that is hardly to be compared with rest. As much a believer as I am in the value of a continuous life out of doors, if one were to have to decide as between complete rest in the ordinary living room as against a continuous life out of doors, but with no carefully graduated exercise, there would in truth be no choice. The results which would follow would be overwhelmingly in favor of the former.

The writer is rather of the belief that the average practitioner of medicine would probably reverse the above order, giving precedence to the outdoor life. This is perhaps due to the somewhat more recent and spectacular features and associations that surround living out of doors—a reversion, in a sense, as it were, to the habits of our primitive ancestors.

But rest, if not spectacular, is at least time-honored, for it was none other than Hyppocrates who was the author of the dictum of "physiologic rest to the part inflamed." As well established as is this theory in general, is it not rather singular that indeed till only relatively very recently deep-breathing exercises have been advocted for the tuberculous?

In choosing this subject I did so in a desire to really be of some assistance, not so much to specialists, but rather to the general practitioner. It must always be remembered that somewhere between 85 and 95% of all cases of tuberculosis have to be treated by men in the general field. The average case simply cannot get away to a resort or to a sanatorium; therefore it behooves the great rank and file of medical men to more fully appreciate the value of this most important single agent in the treatment of tuberculosis. There is really nothing else in its class.

Now, let me speak more especially of "lung rest," for, in the last analysis it largely revolves about two points, viz., *reducing the cough to a minimum and lessening the depth and frequency of the respiratory curve.*

Unfortunately, we cannot splint the tuberculous lung as we would a hip or knee joint. The patient has to breathe; he likewise has to cough. In the latter connection, however, I wish it were possible for every physician to realize the axiomatic truth expressed in—"the worst thing for a cough is to cough." There are exceptions to this rule, but for my present purposes they are negligible. In large measure the cough of the tuberculous patient is subject to control. It is little less than amazing how a conscientious "cure" taker, by a mere act of the will, can reduce the quantity of cough. A rather close experience has convinced me that the average case can, in this manner alone, lessen these spasmodic efforts by at least two-thirds, and, many times, even more.

Practically all patients will be found to be laboring under the impression that it is imperatively necessary that sputa must be raised whenever their minds are conscious of its presence in the bronchial tubes. This delusion, I believe, costs the lives of many tuberculous patients. They should be taught that, commonly, when sputa is first secreted into the bronchial tubes or elsewhere it is likely to be tenacious in character, and equally difficult to dislodge. Fortunately, if the impulse to cough is repressed it will only be a short time until this same sputa will come up with a minimum effort—all due to the rapid action of certain bacteria of liquefaction. This one injunction has reduced the temperature curve visibly almost immediately in numberless patients. The more persistent the repression, too, the more rapidly does it lessen the desire to cough and the quantity of sputum. This repression, however, must be brought about by persistent discipline. Aids to liquefaction are hot alkaline drinks, hot aromatic spirits of ammonia, and small doses of tartar emetic, pilocarpin, and apomorphine.

The lessening of the respiratory curve is chiefly, and unfortunately, brought about by bodily rest. I say unfortunately because how commonly do we see patients whose bodies need exercise, but whose lungs need—must have—rest. The more rapid the disease, the more rapid the respiration and pulse-beats, and the higher the temperature curve, the more imperatively is rest demanded.

The non- or poorly immune incipient needs bodily rest much more than does the partially arrested or immunized. All incipients whose temperature reaches 99 degrees as a maximum should be in bed for from thirty to sixty days. Chronic cases even, with lingering temperatures, many times are benefited by prolonged stay in bed; though in these patients graduated exercise sometimes brings happy results. Exacerbations in any and all cases demand rest.

Excessive talking and laughing are well recognized causative factors of temperature and pulse elevations, and I believe these phenomena are attributable directly to the greater and irregular respiratory movements, with the resultant increase of the local blood supply in the diseased focus, which in turn increases the absorption of toxins. It is thus seen how vitally important it is to bring about lung rest.

Coupled closely with lung rest is *throat rest.* It is now recognized that a very much larger percentage of pulmonary tuberculosis is accompanied by throat complications than was formerly supposed, so that partial or complete throat rest becomes a therapeutic weapon of great value. The most important means of giving rest to a tubercular throat is in the reduction of the cough to a minimum. The dictum that "the worst thing for a cough is to cough" might with equal emphasis be paraphrased by saying that "the worst thing for a tubercular throat is to cough." The reason for this is self-evident. Constant throat irritation converts the organ into a *locus minoris resistentæ.*

Next to interdiction of the cough comes the use of the writing pad. Where there is a serious involvement in the vocal cords and arytenoids its use is imperative. In still milder infections the amount of talking should be sharply limited or the patient instructed to use only the whispered voice. No other one factor is so important in lessening or curtailing the inroads of a laryngeal tuberculosis.

In the proper treatment of stomach and intestinal complications the element of "physiologic rest" must ever be borne in mind. Any adequate dietary is beyond the limits of this paper; suffice to say that in selecting the proper diet for any and all alimentary complications we once again emphasize the rest feature of the disease.

Particularly would I say that this is true of those cases of tuberculosis of the ileum and cæcum. An easily digestible, nonfermentable diet is most important in lessening the peristaltic pain which so certainly saps the vitality of these unfortunate people. In this connection I have found the arsenite of copper most valuable when given in $\frac{1}{50}$ grain doses before all nourishment.

It would be inconsistent, in covering this subject, not to speak of the great value of rest—or conservation, if you please—of the mental and emotional sides of patients' lives. I realize that, likely, it is a more vital consideration among the upper or overcivilized classes than it is in the lower walks of life. However, the relation existing between a man's mind and his body is so close and intimate that a person can hardly treat the one and neglect the other.

The coexistence of neurasthenic and psychasthenic states with tuberculosis is well recognized. It matters not whether they are causative or resultant phenomena, it is a fact that their presence is most common. As a direct result there are numberless things that deserve the attention of every one who treats tuberculosis. These patients react, as it were, to mental and emotional stimuli as few other people do. Here again the temperature records the damage done. In this disease it is rather a singular fact that whatever the deviation from the normal may be, whether physically, mentally, or emotionally, it records itself almost unmistakably on the heat centers—usually, but not always, by a rise in the temperature. This being so, mental and emotional rest is imperative.

Every patient must be individualized, but it will be found that certain apparently harmless things are, if sifted down, the cause of temperature fluctuations. In one, it may be reading, even the reading of an ordinary newspaper. In another, writing letters, and still in another the playing of games will be the exciting cause. Of all the causes of emotional unrest, however, visiting I believe to be the most pernicious. The unemotional life is unquestionably indicated for these people. It is thus seen that emotional and mental rest go hand in hand with rest of the body and of the lungs.

It is thus understood that the attainment of these varied ends is by no means easy. It demands first of all intelligent, sustained coöperation on the part of the patient with the physician. A two-hour temperature record taken by the patient is essential. This will almost always lead to a certain amount of introspection. Now, introspection may be good or it may be bad, wholesome or morbid. It will not become morbid if the physician gives to his patients the sustained interest which he expects from them. That wholesome, rather than morbid, introspection supervenes is, also, I believe, due to the fact that in no other way can a person check up on his life. He gets a graphic result of his every act. Patients thus learn to measure their mistakes, their indiscretion, and the manifold number of accidents entering into their lives. *The damaging factor must be recognized before it can be corrected.*

Self-preservation is the first law of nature; but to intelligently preserve one's self demands in this instance a specialized knowledge of one's self. In this very connection I have come to the conclusion, for several years back, that downright selfish people, while they may make disagreeable patients for the doctor, make good "cure" takers. They are unmistakably more apt than are the unselfish to "hew to the line" in the battle for self-preservation. Selfishness essentially is in fact a sort of unlovely outgrowth of the law of self-preservation.

Again, *per contra,* in this connection I am certain that my experience has led me to believe that unselfish people are more commonly the victims of tuberculosis. Into many, many of these people have I had to inject the doctrine of self-preservation. They must be taught that they have a duty to themselves as well as to others. To them should we give our closest heed, to ascertain if they are getting a large quantity of that all-important therapeutic entity, *rest*—rest of body and of mind. They must cease to carry other people's burdens, and, for the time at least, emulate the law of the brute, namely, the law of self-preservation.

THERAPEUTIC USES OF SOME OF THE PRODUCTS OF THE DUCTLESS GLANDS.

Dr. H. B. Weaver, Asheville.

In 1911 your humble writer had the temerity to read before this society a paper upon the physiological functions of the internal secretions of the ductless glands. At that date literature was very meager on the subject, and no text-book of physiology had given any definite knowledge concerning the manner in which these glands elaborate their secretions or the nature of their functional relations with each other.

Notwithstanding the shortcomings of physiology as taught up to recent date, any one who is at all familiar with the literature of today cannot help observing the rapid accumulation of knowledge concerning the ductless glands and their physiological and pathological relations in their *coördinating functions* and the therapeutic use of the various glandular products in the treatment of diseases. It was then *theory:* it is now *facts.* This wonderful and rapid transformation of thought is owing chiefly to the indefatigable work of Charles de Sajous, who has, with his colaborers, for twenty years, labored with a zeal and knowledge unsurpassed by any other alert thinkers, and whose chief aim has been to give a new interpretation of the scientific factors of all the branches of medicine, and to establish the clinician upon bases of precision and confidence. This suggests the idea that we should look to the autoprotective resources of the body as a foundation for a scientific therapeutics. As Chittenden well says:

"Not only have we learned that certain of the ductless glands, which hitherto were considered of little importance to the welfare of the organism, manufacture specific internal secretions all-powerful in the maintenance of health, but

it has also been shown that these secretions owe their power to definite chemical substances produced through the metabolic activity of the gland cells."

Since the early experience of Berkley and Glee, showing that the removal of any group of these glands causes the most profound disturbances in the general metabolism, the later works of Starling and Zuelzer have demonstrated the correlation of these chemical substances in the production, within the blood plasma, of certain definite products or hormones. The word "hormone," first coined by Starling, comes from the Greek root and means "I incite; I stimulate." Starling says "The significance of these hormones lies in their dynamic influence on the living cells," and compares them to the alkaloids in their specific action. These hormones being secreted during the normal performance of the body functions, and carried in the blood stream to all the tissues, *must* stimulate certain cells to specific action. In the language of Zuelzer, they can therefore be considered as chemical "messages" or chemical "reflexes" which by the way of the blood *mediate* specific functional relations between "distant organs."

This new *chemical* theory controverts and supplants the old *"nervous"* theory, and has been amply demonstrated by such men as Dorhn, Starling, and Zuelzer in their late contributions to physiology.

In recounting, therefore, the rôle which the ductless glands play in the protection of the body functions and in mentioning the therapeutic uses of their products, I have time only to refer to those whose actions are best understood, namely, the Adrenals, the Thyroids, and the Pituitary body. The laboratory extracts of these glands have now been in use sufficiently long, and their clinical effects so thoroughly tested, that it may be said they have passed the experimental stage; but the question recurs: How do they act? Upon what organ or tissues do these different extracts exert their influence, or what deficiency do they supply? This is the crux of the whole proposition.

Chittenden, with emphasis, declares:

"The ductless glands become, then, miniature laboratories, charged with the function of elaborating specific chemical products which are needed for maintaining the normal rhythm of nutrition. Let these glands cease their functional activities, and the lack of their specific products entails disease and possible death."

On the other hand, excessive activity of this system produces equally as disastrous results, as in the case of hyperthyroidism and acromegaly.

Numberless investigators the world over are now laboring in research upon the problem presented by the ductless glands in their correlation

and the physiological effect of their activity in functional disturbances as well as in health, and possibly there are fewer efforts which seem to be of more supreme importance in the physiology and pathology of today.

Hence, I think we are safe in concluding that the adrenals, the thyroids, and pituitary body, functionally united, as they are, constitute an atonymous system which furnishes the dynamic chemical elements, the hormones necessary for the complete oxygenation of the tissues of the whole system, whereby the two living processes—ambolism, the building up of the tissues, and catabolism, the breaking down of the tissues as waste products—are subserved and by which only life is sustained and disease averted.

THE ADRENALS.

The suprarenal gland is composed of two distinct portions, the cortex and the medolary substance, which, like the anterior lobe of the pituitary body and the thyroids, contains cromaffin cells and which is connected with the nervous system through the sympathetic. It is established beyond question that the suprarenal gland manufactures an internal secretion which is emptied into the blood through the suprarenal veins; that it passes through the inferior vena cava to the right side of the heart; thence to the lungs, where it absorbs the oxygen in the alveoli, for which it has great affinity, whereby a *new chemical* compound is formed, containing 94% of oxygenated adrenal secretion and 6% of hematin, which constitutes the oxydizing hormone which carries on the vital process of the body at large. This substance is isolated from the gland for therapeutic uses in the form of powdered extract and in solution in the form of adrenalin and epinephrin.

It is apparent, therefore, that the purpose or function of the adrenal secretion in the organisms should be shown before we can define with any degree of scientific accuracy the therapeutic use of the adrenal preparation. Suffice it to say that the adrenals are the source of a chemical substance, the constituent of the hemoglobin which takes up the oxygen from the pulmonary air to carry it to the tissues and sustain the general oxydation therein, and hence, metabolism and nutrition. The familiar rôle of blood pressure is itself but an expression of enhanced metabolism in the vascular muscles, by direct and indirect action of the adrenal principal, resulting in contraction of the vessel walls, which is the cause of blood pressure. In the same way adrenalin acts as a heart tonic by increasing the muscular tone of the heart through the Thebasian foramina and through its action on the vaso-motor center which controls the coronary arteries.

The diseases in which the suprarenal preparations are especially indicated are those of asthenic type, where they compensate for functional incompetence of the adrenals, foremost of which in my experience in this connection stand the disorders of Addison's disease and typhoid conditions of infectious diseases. Through its action on the vagus and also sustaining the contractile force of the right ventricle, adrenalin has the power of sustaining the heart's action in the crisis of pneumonia and typhoid fever unequaled by few other remedies. Ten drops hypodermically every two hours will tide the patient over the crisis. In surgical heart failure or collapse from shock, or excessive hemorrhages, epinephrin timely administered in saline solution will stay the hand of death when all other remedies fail. It should be slowly administered intravenously, five minims to the pint of warm saline solution.

In asthma adrenalin arrests the paroxysm by augmenting the pulmonary intake of oxygen and cardio-vascular propulsion of arterial blood. From five to ten drops of suprarenin given hypodermically will arrest the paroxysm in ten minutes. In neuralgia and neuritis applied to the cutaneous surface, adrenalin in ointment will produce eschæmia of the hyperemic nerves and thus arrest the pain. In like manner the adrenalin preparations act locally on the mucous membrane of the eye, nose, and throat, contracting the peripheral blood vessels, thereby reducing the congestion and inflammation. Of course it goes without saying that the dosage must be regulated according to the indications of each case.

THYROIDS.

Since Baumann first demonstrated iodine in the colloid secretions of the thyroid gland, and that the para-thyroids secreted phosphorus, the thyroid apparatus has assumed a most commanding importance, especially from a pathological standpoint, as in hyperthyroidism. Hutchinson closed a review on the effect of thyroid extracts on the organism with this remark: "Briefly, then, it may be said that the effect of administration of thyroid is to increase the oxidation of the body. It makes the tissues, as it were, more inflammable, so that they burn away more rapidly."

Beebe lately remarks that he does not know positively upon what set of tissues thyroid secretions act, but rather that "most of the tissues in the body are in some way affected by this substance, perhaps through the nervous system." "We know," says he, "that it is in some way connected with the functions of oxidation in the body."

In summarizing our present knowledge of the use of thyroid extracts in therapeutics, we are warranted in the following conclusions:

First. That the thyroid glands, the pituitary body, and the adrenals are functionally interdependent and constitute a system through which cardiac action, respiration, and general cellular oxidation are maintained (Sajous).

Second. That the thyroid glands sustain the normal activity of the anterior-pituitary body, which in turn stimulates the normal activities of the adrenals.

Third. That the thyroid secretion, rich in iodine, in conjunction with the phosphorus of the para-thyroids, enters the blood stream through the vena cava and joins the adrenal substance and passes through the right side of the heart to the lungs, there absorbing the oxygen of the air, passes back to the left side of the heart, thence through the general circulation to all the tissues of the body, whereby metabolism, nutrition, and immunity are maintained.

In the light of these facts, it is reasonable to conclude that the therapeutic application of thyroid preparations should be sought in those diseases wherein there is deficiency in the secretion of those glandular organs or inactivity caused by the depressing effects of toxines, or waste products which should be eliminated.

It is rather a long list of disorders in which clinical experience has shown that the thyroid extracts are effectual remedies. It is in mixadema and cretanism, the "Pariah" of maladies, as Osler calls it, that we see the most wonderful transformation after the exhibition of thyroid or thyrodin. One-half to one grain daily to a certain child will work wonderful changes in two months.

Chronic skin diseases, particularly eczema and psoryasis, are benefited by thyrodin. Certain chronic cases of arthritis, delayed union of fracture, are improved by this remedy. In anemia, clorotic young women, with menorrhagia, are markedly relieved. In enuresis in children, when other remedies fail thyroid extract in half-grain doses will give permanent relief. In various mental and nervous conditions, particularly when apathy and depression are marked and where somnolence is a feature, as in meloncholia, migraine, and neuralgias, thyroid products will give the physician great satisfaction. We must caution here, the physician, that the dose must not be too large or too often repeated, especially in obesity and certain forms of Graves' disease.

PITUITARY BODY.

The pituitary body situated in the mid-brain, under the floor of the third ventricle, not larger than a small almond, instead of being a

vestigial and useless organ, as once thought, is now found by physiologists to be the most important organ in the body, being the *nerve center* of all vital processes, governing, as it does, the body's immunizing function and controlling all vegetative or somatic functions of the organism; respiration, circulation, nutrition, and locomotion. It is divided into two lobes, anterior and posterior, which are entirely distinct, histologically, morphologically, and functionally. The extract, pituitrin, from the neural lobe, has a separate and distinct action from that of the anterior lobe.

The admirably histological study of the pituitaries of H. J. Berkley and Sajous shows the anterior lobe to be a highly vascular organ full of blood, richly supplied in a network of capillaries, supported by a sparse framework of connective tissue, from which spring a vast number of nerve-fibers which form a nerve-chain, passing through the posterior lobe, its co-certe, into the tuberciurum and thence with the spinal cord down through the cervico-thoracic sympathetic ganglia to the splanchnic nerves, then to the solar plexus, and thence to the adrenals.

The predominating feature of the anatomical relations between the adrenals and the anterior lobe is the connection with the sympathetic system, which proves that this lobe is the suprarenal center. Indeed, we have abundant evidence of the control which this center has over the adrenals, adduced by the experiments of Vassale and Sacchi, who have shown that the removal of the pituitary gives rise to symptoms of suprarenal insufficiency.

Dreyer's statement that stimulation of the splanchnic nerve increases the epinephrin content in the suprarenal veins has lately been confirmed by many observers. This would seem to prove my contention that the adrenal secretion is under the control of the sympathetic system, and that the sympathetic nerves have their origin in the pituitary body. The posterior neural lobe is the governing center of twelve cranial nerves and the vaso-motor nerves.

We can safely assert that the general function of the pituitary body is to stimulate the secretory function of the suprarenal glands and thereby enhance the oxidation process of the system. The latest experiments (1915) of Nice, Rock, and Crookshank prove that pituitary extract has the identical effect on the circulation, respiration, and unstriated muscle as that of adrenal products, only the latter's effect is more transient.

Hare's latest editorial on "Pituitrin as a Cardiac Remedy" is so pertinent that I shall quote him in saying that "the attention of the

medical profession has been so centered upon the extraordinary influence which pituitrin is capable of exerting on the partrient uterus that comparatively little attention has been paid to its usefulness in other conditions, although it has been known ever since pituitrin was first introduced that it was capable of exercising the very definite influence upon the circulatory apparatus, an influence which differs from adrenalin rather in degree than in kind. It is interesting to note that its circulatory effects are being brought forward from a clinical standpoint, its physiological action upon animals having been well proved."

Zeublin has recently reported his experience with this remedy in the treatment of failing heart due to acute infection, and also ruptured compensation in permanent heart lesions. I have found in my experience in endocarditis and other heart lesions that pituitrin has a marked effect on the muscular tone of the heart and blood vessels, acting as it does on the vaso-motor center. One cc. hypodermically every three hours will sustain the heart and respiration when strychnine and camphor fail. In the emergency in pneumonia and typhoid fever and septicemia it will prove a boon to the physician. In asthma, surgical shock, and passive hemorrhages its power for good will be more manifest than that of adrenalin, for its effects are more permanent.

Because of the prompt action of pituitrin upon the smooth muscle structures it has gained a permanent place among obstetricians as an oxytoic, who place it above ergot in furthering the contraction of the uterus.

Recent literature is so voluminous it seems needless to give the indications for its use in obstetrics. In each and every case where I have had occasion to use it, its action has been prompt and satisfactory. It should not be given in the first stage of labor when uterus is but slightly dilated. Its main indication is in second stage with well dilated os, and marked inertia of uterine fibers. Here pituitrin will produce regular, strong, nontetanic contractions which the mother will bear with complacency. It shortens the duration of labor many hours. While it will never supersede forceps, it lessens the field for this instrument, and in many cases the application is less difficult by bringing down the head in easy reach.

When pituitrin is used there is less need for chloroform. It is a sure preventive against postpartum hemorrhage. It is scarcely ever needful in more than one or two doses, repeated in forty minutes. One ampoul of 1 cc. is given in first dose, and one-half to one in second dose. In post-operative cases with stasis of the bowels and retention of urine, pituitary extract acts with surprising promptness.

COMBINED ADRENALIN AND PITUITRIN THERAPY.

As is well known, the serious objection to the use of adrenalin by itself is that the increase of blood pressure is only temporary and is soon followed by a fall sometimes moving below the original. As a result of Kepeninow's experimentations mothers were led to the combined use of these remedies with satisfactory results. Ehrlich was first to call attention to them, in cerebro-spinal syphilis where massive doses of salvarsan had caused colossal dilation of blood vessels, resulting in hemorrhagic encephilitis. He thinks timely administration of adrenalin saves the day. Milan of Paris has done great service by discovering the significance of these in salvarsan accident.

HEALTH CONSERVATION AS AN ECONOMIC FACTOR.

Louis G. Beall, M.D., Greensboro.

Health conservation is attracting widespread interest. We all acknowledge that an ounce of prevention is better than a pound of cure, but all of us do not live up to our expressed beliefs. In the hope of arousing a deeper interest in the subject, I shall endeavor to present some facts concerning health conservation. Perhaps much of my material will be familiar to some of you, as I have drawn freely from the authorities; and my apology for thus presenting the subject is the well known fact that only by iteration and reiteration can we arouse human interest.

Health conservation means more than the mere prevention of disease. It involves a complete revision of the social, economic, and domestic relations, and is of such vast proportions that one can only skim the surface in the short time allotted. However, preventive medicine is the corner-stone of our future activities. It is one of the most important factors involved, and the one to which we must first give our attention. We must convince the public, by estimates of the actual cost, in dollars and cents, of sickness and early death, that these causes of our appalling economic loss are to a large degree preventable.

The ultimate object of all medical thought and endeavor—disease—remains the same, although we are constantly changing the methods of our attack. We are becoming more and more familiar with the causes,

and, acting upon this knowledge, we are winning victories today in the treatment of disease that were not dreamed of by the physicians of a generation ago. The discovery that certain diseases are caused by certain germs has given us a direct point of attack to drive out the enemy; but why allow this enemy to invade our territory, undermine our walls of resistance, and capture the strongholds of our fortifications?

A conservative estimate places the economic loss from preventable germ diseases and postponable degenerative diseases in the United States at $4,000,000,000 annually. This is more than seven times the total amount of money distributed by the life insurance companies in claims and benefits throughout the United States and Canada. It is nearly five times the amount of the National debt. It is almost eight times as much as the total amount spent up to November, 1914, in building the Panama Canal. It is more than seven times the total amount of the combined customs and internal revenue receipts. It is more than eight times the total amount spent on public education.

Stopping three-fourths of the loss of life from tuberculosis, typhoid fever, and other prevalent and preventable diseases would increase our average length of life over fifteen years. There are constantly about 3,000,000 persons seriously ill in the United States, of whom 500,000 are consumptives. One person out of every three in North Carolina has had or will have typhoid fever. Of those who contract typhoid, one out of every ten dies of the disease. Among those who survive, during the first five years after their recovery there is a death rate of three times the average. Of these deaths, we find that tuberculosis is responsible for 39 per cent, and that the degenerative diseases of the heart and kidney are responsible for 15 per cent, making a total of more than 50 per cent.

What would it mean to North Carolina if the average life of the adult wage-earning male should be increased, not fifteen years, but one year? There is now a population of over 2,000,000 people in the State. We will estimate that there are 400,000 adult males, and that each one has an earning capacity of only $300 per year. The lengthening of the life of this group for one year would mean that the wealth-producing power of the State would be increased by the enormous sum of $120,000,000. If it could be increased fifteen years, the wages alone would amount to $1,800,000,000.

From the report of the State Board of Health we find for 1913 there were 12,000 cases of typhoid fever, with 1,200 deaths, in our State, and that there were from 2,000 to 3,000 additional deaths caused indirectly by this disease. We also find that there were 6,000 deaths from tuberculosis, and 3,200 from diarrheal diseases.

Placing the value of each life at $1,700, these direct deaths meant an economic loss to the State of more than $8,000,000, while the indirect deaths meant from $4,000,000 to $5,000,000 additional. When we include the cost of medicines, services of physicians, services of nurses, loss of wages, and other expenses incidental to sickness, we find a total loss of several millions more.

It has been stated that from 40 to 60 per cent of all cases of typhoid fever can be prevented; but I claim that 100 per cent can be prevented; and the time is coming, in the not far distant future, when it will be a disgrace to have this disease, and an acknowledgment of uncleanliness. Its prevention can be accomplished by cleaning up, cleaning out, and keeping clean, together with the use of the antityphoid inoculation.

May I turn aside just here to offer my congratulations to those counties in the State which have public officers of such broadness of thought, of such love of humanity, of such deep insight into the real needs of the community, that they have appropriated the funds necessary to give their citizens the antityphoid treatment? If they now will conduct a vigorous campaign against filth and dirt and flies, this and other infectious diseases in those counties will soon be a thing of the past.

Not only do we suffer an enormous loss from these infectious diseases, but I wish to call especial attention to the appalling loss of life due to the degenerative diseases, as shown by the enormous increase in the death rate after the age of 40, and to discuss some of the causes of this increase. While statistics gathered from the life insurance companies show a most gratifying *decrease* in the death rate during the past ten years in persons below 40 years of age, they show an alarming *increase*, due to the degenerative diseases, after the age of 40. During 1913 approximately 100,000 Americans died from Bright's and other diseases of the kidneys. Fully 60 per cent of these diseases could have been prevented or postponed for years if the presence of the disease had by careful examination been discovered in its early stages. Dr. Lewis Dublin, of one of the large insurance companies, states that during the past ten years the death rate from cirrhosis of the liver has increased 14.3 per cent; from Bright's disease, 18.1 per cent; from apoplexy, 18.8 per cent; from organic diseases of the heart, 39.3 per cent; from diabetes, 60 per cent; from diseases of the arteries, 396.3 per cent.

During 1913 there were 100,000 applicants for life insurance who were declined. Forty-two thousand of those declinations were on account of diseases of the heart, blood vessels, or kidneys. The three larger companies declined to insure over 25,000 applicants during this one year; of these 25,000, 42 per cent were declined because of impairment of the heart, blood vessels, or kidneys. During the past three years one of the

larger companies has had a death record of 8,000, 43 per cent of which deaths were due to these same diseases. In other words, about 3,500 of these deaths were due to chronic diseases, of which at least 90 per cent were premature.

An interesting fact in connection with this matter is that nearly all of the rejected applicants were unaware that they had any impairment, and also that this examination was the only one of its kind that they had ever had.

We know there are three factors involved in the production of cardio-vascular and kidney diseases:

First, the occurrence of diseases in childhood or early adult life which has left fundamental weakness;

Second, the effects of occupation;

Third, habits and modes of life, such as overeating and drinking, and lack of proper recreation, exercise, and sleep.

Again turning to the life insurance companies for our data, we will mention a few of the results obtained by the Medico-Actuarial Investigation. Forty-three companies gave their experiences covering a period of twenty-five years and involving the records of more than two million lives. This investigation was conducted to determine from past experience the types of lives among which the companies had a higher mortality than the average. The insured were divided into many classes, of which the following were the principal groups:

1. Those who were in occupations involving hazard.
2. Those who had a family history of consumption.
3. Those who had a defect in their personal history, such as an attack of appendicitis, renal colic, rheumatism, syphilis, and other diseases.
4. Those whose physical condition was not normal, as shown by indications such as rapid or irregular pulse, albumin in urine, and other symptoms.
5. Those whose habits in regard to alcoholic beverages were not satisfactory in the past, or who used liquor steadily at the time of application for insurance.
6. Those who were distinctly overweight or underweight.

Time will not permit the discussion of all of these groups. I shall confine my remarks to some of the more important, especially those groups in which the impairment can be discovered by a careful, systematic, periodic examination.

For some time the fact has been known in a general way that syphilis shortens life, but just how serious was the result of this disease is now emphasized with telling effect. Of the cases in which the applicants admitted having syphilis prior to the date of application for insurance,

the companies had 274 deaths, while the average mortality should have been 153, or an increase of 80 per cent due to this disease. This means a decreased lifetime for this group of about six years. In addition, we know that it shortens the period of activity of its victims by producing many of the degenerations, especially locomotor ataxia and paresis. A disease which shortens the life and limits the activity of the individual, and which causes untold misery and suffering to the progeny, should be and can be banished by an intelligent public opinion.

It is not generally admitted that alcohol and tobacco play an important rôle in the shortening of human life, but nothing has been more conclusively proven than that a steady free use of alcoholic beverages, or occasional excesses, are detrimental to the individual. Among those who admitted that they had taken alcohol to excess in the past, but whose habits were considered satisfactory at the time they were insured, there were 289 deaths, while the average for this group should have been 190. This means an extra mortality of 50 per cent, or a shortening of life of four years.

In the group who used not more than one glass of whiskey or two glasses of beer per day the excess in mortality was 18 per cent. Among those who used more than one glass of whiskey or two glasses of beer per day the excess of mortality was 86 per cent. Another important fact is that in these groups the death rates from Bright's disease, pneumonia, and suicide were higher than normal.

While the investigation did not ascertain the results of the use of tobacco, we have the results of the laboratory experiments upon animals, which show the development of degenerative changes, the most important being the hardening of the arteries. Who can say how much of the 396.3 per cent increase in the diseases of the arteries during the past ten years has been caused by the enormous increase in the use of tobacco?

Heavy and immoderate eating, producing marked overweight, has a material effect in decreasing length of life, especially at the middle and older ages. For example: Among men 40 pounds above the average weight the lifetime of those who entered the companies at age 45 was about four years less than that of men of normal weight. Diabetes, Bright's disease, heart disease, and apoplexy cause a large proportion of deaths among the overweights.

This investigation shows the effects of incorrect living, and indicates the way in which improvements may be made. From a careful study of the results, one very important fact impresses itself upon the mind, and that is the value of frequent examinations to detect early symptoms and tendencies to disease. I wish time permitted a full discussion of the advantages to be derived from a periodic examination. Dr. Victor C.

Vaughn, former president of the American Medical Association, says: "If preventive medicine is to bestow on man its richest service, the time must come when every citizen will submit himself to a thorough medical examination once a year or more often." He also says that "Science must discover the facts, and medicine must make application for either cure or prevention."

In the examination of 1,557 policyholders for one insurance company, supposedly well persons, the following results were found:

Of the total number, 369, or 23.69 per cent, were found to be within normal limits; 1,080, or 69.37 per cent, were found with slight impairments, and 108, or 6.94 per cent, were found with serious impairments; of the 76.30 per cent found impaired, there were not 10 per cent who suspected that they did not come up to the normal in every way.

In those found impaired the following symptoms were found:

Temperature high	78, or about	5.2%
Temperature low	36, or about	2.4%
Temperature high, and lung impairment	127, or about	8.5%
Temperature high, and low systolic blood pressure	25, or about	1.6%
Lung impairment alone	90, or about	6 %
Heart impairment	238, or about	16 %
Arteries impaired	26, or about	1.7%
Blood pressure, systolic, high (over 140)	75, or about	5 %
Blood pressure, systolic, low (under 120)	232, or about	15.5%
Blood pressure, systolic, high, and albumin	71, or about	4.8%
Specific gravity high (over 1025)	75, or about	5 %
Specific gravity low (under 1015)	83, or about	5.5%
Albumin	119, or about	8 %
Sugar	29, or about	2 %
Specific gravity low, and albumin	34, or about	2.2%
Lung impairment, low blood pressure, and high temperature	62, or about	4.1%
Lung impairment, and low blood pressure	110, or about	7.3%
Tobacco to excess	31, or about	2 %
Excessive amount of alcoholics used	40, or about	2.6%

Grouped as to impairments of lung, heart, and kidney, the following results were shown:

Lung impairment alone	90, or about	6 %
Lung impairment and low blood pressure	110, or about	7.3%
Lung impairment and high temperature	127, or about	8.5%
Lung impairment, high temperature and low blood pressure	62, or about	4.1%
Making total with some lung impairment of	389, or about	26 %

Heart impairment	238, or about	16 %
Arteries impaired	26, or about	1.7%
Making a total of	264, or about	17.7%
High blood pressure alone	75, or about	5 %
High blood pressure and albumin	71, or about	4.7%
Making a total with high blood pressure of	146, or about	9.7%
Low blood pressure alone	232, or about	15.5%
Low blood pressure and high temperature	25, or about	1.6%
Low blood pressure, high temperature and lung impairment	62, or about	4.1%
Low blood pressure and lung impairment	110, or about	7.3%
Making a total with low blood pressure of	429, or about	28.5%
Albumin alone	119, or about	8 %
Albumin and high blood pressure	71, or about	4.8%
Albumin and low specific gravity	34, or about	2.2%
Making a total showing albumin of	224, or about	15 %

While these statistics do not cover a very large group of persons, still the results shown certainly impress upon us the fact that oftentimes a man of seeming perfect physical condition has an impairment which may seriously undermine his health if allowed to go unnoticed. A man may not be afflicted with tuberculosis, heart disease, or any other gruesome malady, and yet may be but a pale reflection of what he might be with his physical handicaps removed, with his life adjusted according to the rules of personal hygiene, even as they are known in the rudimentary state of that science.

In conclusion I will say, first, that our State is paying an enormous toll each year in the loss of thousands of persons whose deaths are due to preventable infectious diseases. We know the cause of typhoid, malaria, yellow fever, tuberculosis, diphtheria, and nearly all of the other infections, and we are taking some precautions to protect against them by the employment of whole-time health officers, by clean-up campaigns, by fly campaigns and mosquito campaigns, by milk and water inspection.

Second, that North Carolina is paying as large a toll, and in the future will pay a still greater toll, to the postponable degenerative diseases; and we sit idly by, with our hands folded, when we know that the incipient symptoms of these diseases can be early detected by periodic, systematic, and thorough examination. The infectious diseases have grown beyond an individual concern, and have become a community concern,

and must be handled to a large extent by the community. The general practitioner of the future will be called upon more and more to treat the degenerative diseases, and he must equip himself with laboratory and adequate apparatus to detect the early signs of these diseases. He must prepare himself to regulate the lives of his patients. He must first learn the gospel of moderation in diet, and of clean and sane living, and must preach this doctrine to his patients. He must teach his patients the necessity of frequent examinations. He must instruct the youth in matters of sex hygiene. He must show his patients how to stay well, by observing laws of health in regard to recreation, exercise, and other simple laws of nature. In other words, he must lead in matters of prevention as he now leads in matters of treatment and cure.

Am I invading the realm of dreams when I say that in the not far distant future we will find groups of families who will band together and pay a doctor to keep them well? That they will employ a health master who will cease to be merely a carpenter, with his kit of tools, responding to emergency calls, and who will become an architect building an earthly temple for the habitation of a divine spirit.

Dr. J. M. Templeton, Cary: I do not know who introduced this plan of discussing a whole bunch of papers together, but I am not much in favor of it. There are a good many papers read that are not worth discussing, and that we would not waste our breath on; but occasionally a paper comes up that is worth discussion, and that should be discussed when it comes up, and not covered with a lot of chaff and forgotten. Now, if we are going to cut out discussion altogether, I would suggest that we turn the meeting of the State Society into a social function, only reading our papers by title; then next winter, when the weather is cold and the roads bad, sit down by a good fire, select from the Transactions the papers we wish to read, and discuss them at leisure.

Dr. Albert Anderson, Raleigh: When we come to a number of papers like this, I feel, like Dr. Templeton, that we cannot talk much to the point. However, I am moved by Dr. Beall's paper on health conservation to say something about the importance of preventing disease. Those of us who are approaching the age of 50 must be moderate in all things if we expect to live long. It touches my work, because I see that the very things he suggests will prevent not only physical disease, but also mental disease, and will help me by keeping away so many cases that are produced by arterio-sclerosis and heart diseases. I wish also to express my appreciation to Dr. Anderson for his paper on "Occupation

as a Therapeutic Agent." I have tried this out, and I know that work helps effectively. If I had time I would like to mention some of the cases that have been practically cured by the various diversional occupations that we have recently introduced into the State Hospital at Raleigh, but time forbids.

Dr. I. W. Faison, Charlotte: There are a good many things in Dr. Beall's paper on "Heart Stimulants and Tonics" that I agree with, and one is the value of digitalis. It is too slow to rely on, however, when you wish speedy results, unless you go to the chemical preparations, digalen or digapuratum, and then use them in the circulation directly. Then you get a rapid absorption and rapid action. If you give it hypodermically or by the stomach, the chances are that it will be twenty-four hours before it has any effect, and the patient may be dead before you get the desired action.

The four drugs I use are adrenalin, camphor, digitalis, and strychnine. These are all valuable. Dr. Beall spoke of one drug that I do not believe in, and that is sparteine. If you gentlemen will go home and take a dose of it and feel how it hurts, I think you will agree with me that it is not worth a cent. It has been ruled out of the later pharmacopeia. To give it hypodermically and punish a man as you do—and then do him no good—is out of all reason in a Christian country like this.

I scarcely know how to discuss Dr. McKay's paper. I want to say, however, that after twelve months study over what was said at Raleigh by Dr. Parrott in his speech, I indorse it now more than I did a year ago. I indorse every word in it. You may call me a fanatic, if you want to, but I am not a hypocrite. In the past nineteen years I have not given a drop of alcohol to any patient. In only one case would I give it, in a case where a heart is beating ten, twenty, or forty beats to the minute, I would give alcohol to paralyze the peripheral ends of pneumo-gastric nerve in the stomach so as to turn loose the inhibitory section of that nerve on the heart. That is the only condition in which I would give it, and that is a condition which I have never seen. I indorse what was done a year ago, and I congratulate Dr. Parrott for standing up like a man and saying what he thought. The men who are studying by the bedside and studying in the hospitals are ruling out alcohol, and we are not using it today as we did twenty years ago. I heard an illustrious doctor in New York say, "I have every kind of drink known to man in my cellar; I am no prohibitionist, but I want to say to you that the poison of typhoid and the poison of alcohol are on the same line, and you are only adding insult to injury when you prescribe alcohol in this fever." The same thing is true of pneumonia, and if it

ever saved a case of ileocolitis, it was in spite of it. I have never given a drop of it in those diseases in nineteen years, and if it was given in spite of me, I saw some one in the house about it. I control a case or I get out.

Dr. James B. Bullitt, Chapel Hill: In attempting to raise the dead we are perhaps generally unwise; but alcohol, in spite of last year's resolution, is a rather lively corpse. I think what Dr. McKay said in the first part of his paper justifies serious consideration, for it is not wise to be too extreme. The latter part of his paper goes entirely too far. Dr. Faison, I think, is at one extreme, and Dr. McKay at the other. I think it is true, and I think all of us will agree, that alcohol has done in the total more harm than good. The use of alcohol in medicine, except for external purposes and as a solvent, is comparatively limited. In my own practice I do not think I have prescribed it more than a dozen or so times in my life. But on some occasions it is useful, and in those cases I do not think we should refuse to use it on account of the damage which it sometimes does, any more than we should refuse to use opium because of the damage it does. I certainly want to utter one word of caution against allowing ourselves, in the enthusiasm of the moment, to be deprived of its use in appropriate cases. Even Dr. Faison said that it is of value on some occasions. Let us be moderate and reasonable and avoid heaping abuse upon this therapeutic agent merely because its excessive or inappropriate use is capable of incalculable damage.

Dr. S. M. Crowell, Charlotte: I wish to say a word in support of my "old friend," Sulphate of Sparteine. I have the greatest respect for Dr. Faison and his opinion on all subjects. However, with some other good men, I feel that he has been misled as to the efficiency of this drug. I have used sparteine for ten or more years, and remained by the bedside to observe its effects, and I am prepared to say that it is an ideal heart tonic and stimulant when properly administered, and this is in gr. 1 to 2 hypodermatically every two to six hours till desired effects have been secured. Of course, you cannot expect to get the physiological effects in homeopathic doses, as most doctors have been in the habit of giving it, *i. e.*, gr. $\frac{1}{5}$ to $\frac{1}{2}$ by mouth. See what Barthalow has to say about this drug, and act accordingly, and you will get the results, as I and others have. I recall that Dr. Stuart McGuire of Richmond differed with me something like ten years ago at Raleigh, but now he agrees with me, and so states in his reprints and book on surgery.

Dr. P. R. Hardee, Stem: In reference to Dr. McKay's paper, "Have Alcoholics a Place in Medical Therapeutics?" For twenty or thirty

years I have tried to be a neutral observer in this controversy that has been waging, and have observed that about thirty years ago there was one man in the medical profession at that time who was considered a crank, for he claimed that alcohol was not only a narcotic, but a sedative. With such eminent practitioners as Austin Flint, Sr., of New York, and William Pepper of Philadelphia, and such therapeutists as Wood and Barthalow, against him, he stood almost alone in his claims. This man, who in those days was thought to be a crank on the subject of alcohol, was none other than Dr. N. S. Davis of Chicago, who is now so familiarly known as the father of the American Medical Association. Dr. Davis admitted that alcohol increased the number of pulsations per minute, but claimed that it did so at the expense of the force, and hence was a sedative to the heart. (We had no sphygmomanometers in those days.) Now we all know it lowers blood pressure. As time has passed, I have observed that every discussion of this subject has gained converts for Davis. So complete has been the revolution of opinion on this subject that were a modern book on therapeutics to index alcohol as a stimulant it would be looked upon by a very large majority of the profession as very misleading. Hence, Mr. President, I most heartily indorse the resolution passed at the Raleigh meeting, claiming that in therapeutics alcohol has no place, and refute the assertion in Dr. McKay's paper that this resolution was the result of one man's enthusiasm, and claim it is the result of increased knowledge on this much abused subject. I am glad it is so, and with much pleasure I note that Dr. McKay today is as much in the minority as was Dr. Davis thirty years ago. So much for the past and present. If Dr. McKay will study this subject with the aid of a good blood-pressure instrument, supplemented with a modern work on therapeutics like Bastedoes and a modern physiology like Howell's, I predict that in the near future he will not be alone.

As a food its caloric value has never been doubted, and our therapeutists tell us that an amount equal to 3 ounces of alcohol or 7 ounces of whiskey can be utilized by an adult in twenty-four hours, and while the system is using this to produce heat it is holding in reserve an equal caloric value of carbohydrates or proteins. As it requires no gastric juice for its digestion and no effort on the part of the stomach for its assimilation, it often serves a useful purpose in tiding a patient through periods of great weakness, as in fevers, and when the cases are accompanied with nausea or irritability of the stomach I frequently find that by adding one tablespoonful of whiskey to a glass of milk it changes the taste of the latter and, aided by the local sedative effect of the whiskey

on the gastric mucous membrane, it causes the milk to be retained and assimilated when it otherwise might not be. In conclusion, I have but to say that in the discharge of my professional duties I have never permitted myself to be swerved one iota by prohibition sentiment, and have prescribed whiskey when indicated, just as I have strychnia, quinine, or other medicines. Since becoming familiar with the physiological effects of alcohol about twenty-five years ago, I have failed to find a single instance where its effects were indicated except as stated above.

SURGERY.

TREATMENT OF THE BONE WHEN AMPUTATING EXTREMITIES.

Drs. D. W. and Ernest S. Bulluck, Wilmington, N. C.

The ultimate hope for every amputation is that the loss of the member shall be partly compensated by a useful stump. It is rather the exception to see an amputation, especially well done at the time of operation, leave a stump that is ideally fitted for its mission.[1] To meet its requirements, a stump should be covered by movable skin, be well padded with soft parts, and if of the lower extremity, should bear the weight of the body without evidencing tenderness. Pain and tenderness make stumps useless for direct weight bearing.

Lyle[2] studied thirteen patients whose thighs were amputated by different surgeons, and found only one end-bearing stump. In ninety-six amputations Crammer[3] found seventy "bad stumps" and only two capable of bearing direct weight. The same absence of utility is shown in Braunig's[4] study of one hundred and twenty-two amputations at the thigh and leg, for he found "only a few" end-bearing stumps. These operations were performed by the periosteal method, by which the periosteum is preserved and used to cover the raw end of the bone. These bad results are from fair samples of this method of amputation. It is likely to become a question of how much responsibility rests with the surgeon, as to whether he has done the best that could be reasonably expected of him. According to the estimate of Lyle, 20% of painful stumps are due to progressive osteitis, periostitis, and neuritis caused by the compression of nerves. To obviate these conditions the nerves should be pulled well out and cut close, so that they will retract beyond the scar tissue of the stump. The end of the bone should be protected from trauma and well covered by soft parts. The remaining 80% of painful stumps he attributes to atrophy and exostosis. To avoid stump atrophy, early begin massage and exercises. After the first week a box is placed in bed and the patient presses the stump against it for a few minutes. The duration and frequency of this and other exercises are increased until the entire weight can be borne upon the stump. If the amputation is of the lower extremity, a "peg" is fitted on, to which the weight is transmitted directly. The best formed stump, if not quickly put into use

as a real support, may become atrophied and useless. Later a permanent prosthetic appliance is fitted so that it will receive the weight through the end of the stump and not distribute it to the sides of the limb and the joint above. By far the most important factor in the production of painful stumps is exostosis. It is the common practice in amputating to cut through the periosteum at a lower level than the line of incision for the bone. This periostal cuff is turned back until the severance of the bone, the periosteum, is then pulled over its cut surface. This procedure resulted from the belief that the bone was nourished entirely by periosteum, and in the event of its removal necrosis would result. Small fragments of bone escaping from unhealed stumps were accepted as proof that the denuded bone had not been well covered with periosteum and died as the result thereof. We now know that the bone depends upon the internal blood supply for nourishment, and if deprived of its covering will not die. This precludes the necessity of covering the bone with periostal flaps.

Hirsch[5] has shown that in covering the bone with periosteum many shreds result. These retain their primitive osteoplastic function and produce bony spikes that interfere with the comfort of the stump. To prevent the formation of these bony excrescences three methods of treating the cut bone have been evolved. They all have as their object the prevention of bone spicules, yet this end is attained by different means, and under certain conditions one method offers advantages over the other.

Tendinoplastic Method. (Duval-Welms.) With this method the periosteum and bone are sawed transversely at the same level and a piece of tendon large enough to cover the raw surface of the bone is drawn across it and stitched to the periosteum at the edges. This method has a limited application, but gives good functional stumps at the knee, ankle, and elbow, where good tendons are available.

Osteoplastic Method. (Bier.) By this method the bone and the medullary canal are covered by a bony flap. If the flap is to grow over the end of the bone with certainty the periosteum should maintain its normal connections.[6] This is thought by Estes[7] an excellent means of closing the canal and covering the bone. It supplies a bone stump, the architecture of which seems especially designed for weight bearing. The success of this procedure depends, however, on certain conditions. Some bones are better sources for the bone flaps than others. Further, if the flap is to adhere and grow, there should be no trauma or infection—two conditions prominent in most injuries necessitating amputations. Lastly, if the flap should die, the result is worse than through failure of any of the other methods. While the results are excellent under proper conditions, its use cannot be general.

The Aperiosteal Method. (Hirsch-Bunge.) This method avoids exotosis by dividing the peritoneum one-half an inch above the level of the bone amputation. (Bunge [8].) This leaves the cut surface of the periosteum in an undisturbed relation with the bone and spares it the trauma incident to the sawing. The bone marrow is then spooned out for half an inch to prevent its growth exuding from the bone canal. It has been shown by Haas[9] that the regeneration of the bone is never found except when periosteum is present and the uncovered bone stump remains clean and smooth. This method has had extensive practical tests in the Russian-Japanese and Balkan wars, with results that are brilliant when compared with the old periosteal method. In studying forty amputations done in this manner, Ranzi[10] found that twenty-five had healed by primary union and fifteen by secondary intention; thirty-one end-bearing stumps were obtained; in seven cases the results were "fair" and two stumps were not end-bearing. Of the fifteen cases healed by secondary intention, ten had good stumps, four were fair, and one was a failure. The remarkable feature is the good results obtained from infected cases. It is in just these cases that the periosteal method fails, for inflammation leads to exostosis. In the event of complications in healing, this is the only method that is likely to result in a good stump.

We may properly conclude that the end results from periosteal amputations are uniformly poor; that under certain conditions osteoplastic and tendinoplastic operations leave good stumps, but that in the aperiosteal operation the results are more certain and just as good as in either of the others.

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DRAINAGE AND DRESSINGS.

H. S. Lott, M.D., Winston-Salem.

PRELUDE.

Our advances lie in early recognition. Conditions and pathology do not change; but each decade brings its crew of workmen, and the pendulum swings, because the workmen change.

Simple, direct methods, in surgery, accomplish most. The men who have achieved greatest success—life-saving success—have realized this fact and adopted such methods.

Two main points should always lead the surgeon: first, recognize a focus for attack, and, second, reach this focus promptly, remove it, if its removal is possible, and stop. The blind seeking for something which may or may not exist prolongs the anesthesia and taxes unduly the vitality of the patient.

Most especially in abdominal surgery should this fact be borne in mind, for 'tis here that symptoms are most obscure and misleading and that the temptation is greatest to locate the focus and establish a diagnosis after the incision is made. In yielding to this temptation, the surgeon not only blunts his own sensibilities, but also obstructs the path of progress toward that refinement of diagnostic skill which should ever be his aim.

Furthermore, before making the incision, or at least before completing the incision, it should be determined, so far as it is possible, Will the case be one for drainage, or will it not? *Nature's way is to drain;* drainage, therefore, in the surgery of today is a life-saving element. The peritoneum is the surgeon's friend; but even friendship should not be abused, and when its surfaces have been ever so slightly soiled, and in small areas, a tiny wick to lead filth from this point gives our patient a better chance and ourselves a better conscience; and if the case should be one with pus, and the extensive freeing of adhesions, then the simple, and ample, straight incision with an abundance of drainage, and the "wide-open game" afterward, is, beyond a doubt, the best one to be played.

Drainage, therefore, and its distribution is not a chance and haphazard procedure, but an essential, and a life-saving one. In the field of general surgery a simple clean gauze wick, after an amputation, will lead out the effusion of blood and serum which is sure to come within the first twenty-four hours, and which but for this wick must remain and await resorption.

Within the pelvic and abdominal cavities drainage and its proper and effective distribution is most essential in about all conditions urgently demanding surgical intervention; in many cases the most that we do is to anticipate Nature; and the manner of its placing indicates the skill and wisdom of the surgeon equally with any other feature of the operation. For instance, in pus cases of appendicitis, of which today there are comparatively few, the want of drainage is the want which both demands and justifies the operation. After finding and removing the appendix, all points for the possible accumulation of filth should be sought, free vent established for its egress, and a gauze wick carried to the remotest point of its travel. These gauze wicks may be placed between coils of intestines, between omentum and intestine, even to the opposite side of the abdominal cavity; and to the floor of the pelvis; and unless it is done, and this filth given vent, we have done very little for our patient.

In some cases, about as bad as pus cases could be, and after removing a very large part of the omentum, I have carried good-sized wicks entirely across the abdomen, well up under the lower border of the liver, and well down into the pelvis; and once, in a case which I remember very well, this distribution in all three directions was necessary; and while at the time it looked very much like invading foreign territory, I believe it contributed very largely to saving the life of the patient. Therefore, in pus cases, where it is of such vital importance, there is very little danger of putting in too much drainage, carefully placed; and I firmly believe that the danger is far greater of putting in too little.

In the placing of drainage the order of entrance to the abdominal cavity should be reversed. For instance, with the topography of the region well in mind, we pass two fingers through the abdominal incision, and working from a given point, carefully and systematically seek in all directions, even to the cavity's remotest limit, for the focus demanding repair; this point once located, our efforts will be restricted to its limit, and their results will be far more effective.

Having accomplished our object, and bearing well in mind the plains of cleavage which have led us to this point, our wicks for drainage should be placed reversely, from *within out,* all seeking and making exit at the lower angle of the *primary, straight* incision, and the direction of each well borne in mind for future reference. "It is the little things in life that count," and I know of no condition in which care and precision are better worth the while, or will give happier results, then in the placing of drainage in pus cases of appendicitis.

The after-care of these cases is a matter of very great importance, and I feel that it is one about which we hear too little by prominent operators.

Dressings, and their proper doing, are of equal importance with the primary operation. With just what was done at the operation and the distribution of our drainage well in mind, the plan of each dressing may be pretty well outlined beforehand. This saves time, and as patients look forward to dressings with a great deal of dread, they should be done as gently and as quickly as possible.

Each dressing should be done with strictly aseptic preparation, both of the dresser and the material used; not with parade and display, but with simple, thorough cleanliness. In bad cases, left open, where the drainage is good and we have a wet patient and a wet bed within the first twenty-four hours, the dressing should be changed at the end of that time. This is done simply for the sake of comfort and cleanliness, and the wicks are not disturbed at all.

After forty-eight hours very gentle traction may be made upon the wicks, bearing well in mind the direction of each; no force should be used at this time, just the weight of the hand being sufficient, and the patient should be given as little pain as possible, although the giving of some pain is unavoidable. Wicks, well distributed in such cases, should be largely left to loosen themselves, and there should be no hurry about their removal, the danger of removing them too soon and by force, being much greater than that of leaving them in until they are well loosened, and the bowel wall, with its tendency to slough, has regained its normal tone; and this cannot be safely counted upon until ten days or two weeks have elapsed.

As to the use of irrigation in these wide-open cases, I have used it, and I have dressed them to a closure without its use. That the irrigation destroys some granulations, and that the filling-in is done more slowly by its use is very true; but there are filthy cases in which I believe that it is best, and in return for the delay and the larger period in bed, the patient gets a much more firm cicatrix, with less likelihood of an obstruction, or a hernia, afterward.

The application of the bandage in the after-care of drained abdominal cases is a very important feature. This bandage affords protection to the abdominal wall, preventing undue laxity of its muscles, and favoring firm union where the incision is made.

The many-tailed bandage is the best one to be used, because it can be adapted more snugly to the irregular outlines of the abdomen and pelvis and will stay in place with more certainty. In putting on the bandage

it is best to have a nurse on the opposite side of the patient, and with each tail drawn taut make the laps *always* from *above, down,* with the final one straight across the prominence of the hips. These laps should be drawn as tight as the dressings beneath and the comfort of the patient will allow; and made secure by a good-sized safety-pin, just within each illiac crest, and a line of them up the center of the abdomen, just where the cross is made.

No two cases can be dressed exactly alike; the nature of the condition at the time of the operation, and the distribution of the drainage, will separately govern each one. But the principle underlying all, and the object in view—*remembering that the abdomen wants to put things out (this is its function)*, and that we are only helping in a natural process—is always the same: the doing of just enough, and doing this with safety, demanding thought, cleanliness, and precision.

DANGERS AND DIFFICULTIES IN APPENDICITIS.

Dr. J. T. Burrus, High Point.

The ordinary acute, subacute, or chronic appendicitis, if seen early and treated according to any recognized surgical authority, yields to treatment promptly, and we rarely ever have any impediment in the recovery of the case.

A very eminent authority has said: "The appendix can be the easiest thing to deal with or the most difficult, and ofttimes 'tis hard to determine under which class a case will come.

The handling of very acute cases after they have passed beyond the stage for early operation—I mean by this, beyond the first thirty-six to forty-eight hours—demands our serious consideration and watch-care.

It has been demonstrated over and over again that peristalsis does not occur unless food or cathartics are put into the stomach, because of the increased peristalsis which is due to food or cathartics within the alimentary tract.

The ileocæcal valve endeavors to protect the sensitive, inflamed tissue from any other burdens; hence the pain that we get in these cases and also the nausea, which must be due to a reflex influence.

Things to fear are food and cathartics. If this is true—and it seems to me to have been pretty thoroughly proven—then it becomes important that we withhold such from our cases.

In my losses I cannot recall a single case that had not been fed and purged.

(*Gastric*) *Lavage* is one of the most important treatments, and should be done when indication demands.

Some time ago, with one of my medical friends, I saw a very acute case of fulminating appendicitis. I suggested, after our conference, a gastric lavage. This suggestion was answered by saying: "Doctor, I can't see why you should wash his stomach now, since he has been vomiting all day." My reply to this was, "Just because he has been vomiting all day."

I am sure that when vomiting persists, there is something on the stomach which should be removed, and there is no better way to remove it than by stomach washing.

Many times I have seen patients who looked to be desperately ill, and indeed they were. Every evidence of the case being serious: restlessness, nausea, vomiting, rapid pulse, rigidity, local or general tenderness. I have given stomach lavage three or four times, thoroughly washing the stomach at intervals of four hours; withheld all food and water, and have been surprised to see so much improvement. Expression changed, abdomen become soft, fever reduced, vomiting ceased, and the picture altogether different from what the case was twenty-four hours previous.

The cause of many failures is disregard for one or all of the cardinal points.

1. A little liquid food is given by the mouth, or (2) some form of cathartic was given, or (3) a failure to remove all the gastric contents by lavage.

The Fowler-Murphy treatment is important and gives us good returns when we carry it out properly. From this general class I wish to exempt very old people and very young children. Old people, because of their lowered vitality and lessened resistance do not stand confinement to bed well, and most frequently we have early and serious complications with these patients. Children have not the ability to resist a severe abdominal infection, owing to the inactivity of the lymphatics, the undeveloped omentum, and also the small blood supply which the peritoneum and omentum have.

Pus, walled off, or free in the abdominal cavity, is of serious moment. All of these cases demand thorough drainage to insure any degree of safety for the patient. It has not been my plan to remove the appendix in cases with walled off abscess cavities, or to search for it. Neither have I endeavored to remove the appendix when there was free pus in the abdominal cavity, realizing that any molestation could only open

up new fields for infection and thereby jeopardize the life of the patient —only removing the appendix when it presented itself in the wound.

Since this plan of treatment, my mortality has been lowered 40%. The only salvation for these cases is drainage. Naturally, then, we ask, What is the best way to drain?

In drainage we must effect it uphill, especially if there is pus in the pelvic cavity. I believe it well to always make a lumbar opening for drainage, especially if the pus cavity is post-cecal; if not, let the drain extend from the lowest possible part of the abdominal incision.

Gauze does not wick pus; therefore it is not good to use except to protect the intestines, omentum, and wall from the hard rigid rubber or glass drainage tube. I depend on the rubber or glass tube for drainage and feel sure they are more effective.

The tube to be left in the pus cavity, then, connecting it with another tube that swings free in a bottle beside the bed, just as we drain the gall bladder cases. 'Tis well to place at least three tubes in the cases where free pus is found, one beneath and between the intestines, and especially the serious fossæ, one in the pelvic and one directed to the subphrenic fossa. However, we must remember that pus cavities only are drained and never the entire abdominal cavity.

Hematama of the wall comes to us all, and is the result of imperfect hemastasis. To recognize this condition early, open up the wound, secure the bleeding point, and reclose. Using a local anesthetic will hasten the recovery; therefore, make the patient a stronger abdominal wall. If this has existed too long, aside from removing the clots of blood it will necessitate the leaving of a small drain in the wall.

Hernia following appendectomies is frequently seen, which is due to two causes: prolonged drainage or nerve injury. The branches of the tenth and twelfth dorsal nerve, and the ilio-hypogastric nerves are very likely to be injured in making an intermuscular incision, unless the utmost care is exercised. This leads to a weakened wall, due to an imperfect nerve supply to the muscles, and many times to the extent of muscle atrophy.

Hemorrhage from the mesentery may occur. In my experience I have had to reopen more than one abdomen to secure a bleeder in the mesentery. Therefore, 'tis well to see that both heads of the meso-appendiceal artery are securely ligated.

Leakage from the appendix stump has never occurred in my practice, so far as I know. I think this has been avoided (1) because I devasculate the stump with a clamp, and (2) the appendix is severed with a cautery above the clamp.

Adhesions. A condition that every surgeon has had to deal with, haunting many of us by night and causing many hours of thought and study by day. There are two distinct varieties: First, the thick, strong, dense bands resultant of some other inflammatory process; second, the recent fresh adhesions which are veils of fibrinous tissue unsupplied with vessels. If adhesions are dense, cut the band and stitch the separated ends over, so that the raw surface is thoroughly protected; this offering the best treatment to secure against reforming. In the thin fibrinous veils a piece of gauze wound around the finger will be enough to effect a division. In separating any kind of adhesions, the course of the mesenteric vessels should be borne in mind. I am of the opinion that if we would always carry out the most excellent technic as seen in the clinics of Mr. Lain, Mr. Jones, Mr. Hoynihan, Dr. Crile, and others, we would see fewer post-operative adhesions.

Infection of the wall is unquestionably due to an error in technic. I believe if the tetra-pads are used so that the wall would be protected from the intestines, appendix, or any purulent secretion, we would never have an infection in the wall. This procedure also offers the best protection against skin infection.

Fecal fistula has become an infrequent complication, owing to our better technic. In my work it has occurred in cases where the appendix was gangrenous, and such a process had extended to the wall of the gut, or from pressure by rigid drainage tubes, causing a necrosis of the intestinal wall. Happily the majority of these cases close spontaneously. Occasionally they continue for a long time, necessitating a second operation.

Ileus is of two forms:

1. Paralytic form, which is caused by excessive handling of the intestines or to long exposure to air. I have only seen this in cases of progressive peritonitis or mesenteric thrombi. This form is unbenefited by any operative procedure.

2. Mechanical form, due to adhesive bands which kink the intestines or a band forms so dense, encircling the bowels, that it closes the lumen. In this form an immediate operation is necessary to save life.

Phlebitis. Complicating appendicitis is due to infection. This condition demands rest, elevation of limb, and uniform pressure around the limb.

In closing I wish to quote from Dr. Ochsner some rules that I feel sure will help us to reduce our mortality:

1. Patients suffering from chronic appendicitis should be operated on during the interval.

2. Patients with acute appendicitis should be operated on at once, provided they come for treatment when the infection is confined to the appendix.

3. In all cases of acute appendicitis, food and purgatives should be absolutely forbidden, and large enematas should not be given.

4. In cases of nausea and vomiting and gaseous distention, gastric lavage should be thoroughly done.

5. Water and all kinds of food should be forbidden; thirst quenched by rinsing the mouth with cold water.

6. All cases are benefited by the Murphy treatment.

7. Rectal feeding will sustain the vitality of the patient for a sufficient length of time.

Dr. R. L. Payne, Norfolk, Va.: It would seem that appendicitis has been so thoroughly threshed out at different times that there would be nothing else to say, and it would only remain for us to do; but, like Banquo's ghost, the subject will not down. I cannot agree with the gentleman who has just read a paper, in all that he said. I cannot agree with even so eminent an authority as Dr. Ochsner in the position he takes, that there are times in the history of cases of appendicitis when operation should be withheld. I believe that there is only one time to operate in any case of appendicitis, and this is when the diagnosis is made. I would not hesitate one moment longer than I could get the patient into the operating room to open his belly up and remove the appendix, if I were permitted to use my best judgment, because time and time and time again in following out this idea I have found free pus even two or three hours after the inception of the attack. Free pus in the abdomen—why should we wait? How are we going to tell it, how are we going to know when the pus has been walled off, and when the appendix is not ruptured? We have the same symptoms, as a rule; may be some shock if the appendix is ruptured, but we are not often there to recognize it. We have rigidity, we have pain, we have more or less temperature, we have quick pulse; but whenever you get that rigidity, it does not make any difference about what your other symptoms are, you can't tell any more about it. You can guess about it; you can say, "I don't believe it is ruptured," "I don't believe it is walled off." Then, why wait? You can't know till you look in. There is nothing truer than the joke in *Puck*, that when doctors don't know they look in to see. Certainly, we have got to look in to see in appendicitis, after we have made diagnosis, before we can be sure. Now, I think it is all right to withhold food and drink by mouth; I think it is all right to withhold

cathartics; I think, after the operation, it won't do to purge too quickly, or we will have trouble; but I am perfectly clear in my own mind, in spite of all the evidence to the contrary, that when a diagnosis of appendicitis is made, then is the time to operate.

Dr. H. S. Lott, Winston-Salem: Dr. Burruss's paper is too valuable to say nothing about. Just a few points: For instance, gastric lavage—is that due to the stomach content? Is it not as likely an empty stomach and the nausea and vomiting a reflex symptom from infection? Is the delay saving or losing time? As to the lumbar incision, it seems to me always that it is an additional surgical trauma, especially in children. These cases, with an ample incision in the beginning, and the evacuation of the accessible pus, and suitable drain, each man using the one with which he is best accustomed to work, and the patient packed well over on the right side, with pillows, and the knees flexed well on the abdomen, *will drain.* As to paraffine, iodine, peroxide of hydrogen, or any chemical put into the abdominal cavity in these cases, I not only question its value, but I do believe, *firmly,* that it is hurtful, very hurtful, favoring destruction of tissue, and post-operative sequelæ. If a cleansing bath or floating media is desirable, normal saline solution is safe and sure.

Dr. Joseph Graham, Durham, N. C.: I am not going to attempt to speak of the dangers and difficulties that Dr. Burruss has so fully discussed, the greatest danger coming from the perforation and its results. All of us believe in immediate or early operation on cases that are not perforated. A great deal of blame has been attached to the country physician and the family physician for not bringing in his case early. In my experience, a great deal of this blame is not warranted, and I want to take this opportunity of taking some of the burden off the general practitioner's shoulders. In the majority of these late cases, when I make a thorough, detailed investigation of the history of that case, I find that very probably the family physician was not called to attend the case until after the appendix had perforated. Therefore, I think that we should, through our Surgical Section, remove some of the burdens which have been cast upon our family physicians. In North Carolina today every family physician that I know of, and in my acquaintance, believes in immediate and early operation for appendicitis before it is perforated. Now, about what we should do with the case after it is perforated, I want to take this position: Seven or eight years ago I read a paper before the North Carolina Medical Society and before the Tri-State Medical Association, in which I advocated operating on every case of appendicitis as soon as the diagnosis was made. I not only advocated

that practice, I followed it, in the country home, in the hospital. My mortality was low. I was finally induced to try the Ochsner treatment, and I want to state here that I have never lost a patient that has been given the Ochsner treatment.

Dr. C. S. Lawrence: The difference of opinion among surgeons in the treatment of appendicitis seems to be that of removing the appendix in the presence of pus or leaving it in and drain. My first experience was that of draining in the presence of pus, instructing the patient to come back for a subsequent operation for the removing of the appendix. In every one of these cases that I have seen professionally after leaving the hospital they had another abscess and were forced to come back for another operation, and I have had to remove the appendix in the presence of pus in these cases. I, therefore, make it a rule wherever I can possibly do so to remove the appendix in all cases.

Dr. F. Webb Griffith, Asheville: I agree with Dr. Lawrence that where the appendix can be removed without too much difficulty, by all means remove it. If you have free pus without any evidence of walling off, then I can see no reason why the small amount of manipulation necessary to remove the appendix should be harmful. If, on the other hand, the abscess is walled off, and in order to remove the appendix it is necessary to paw around and dig it out, by all means leave it alone, for in such cases it would be criminal to break up the adhesions.

I wish also to emphasize the value of gastric lavage. We do not use it half enough. I had this impressed upon me recently in the case of a young man from up in the mountains. I felt that the stomach ought to be washed out, but as the family was of the uneducated class, with strong prejudices, I decided to hold off, as it looks to the laity to be a cruel procedure. Later in the day, however, I told the family what I was going to do, and explained to them that it was not so cruel as it seemed. The mother replied: "Doctor, I was wondering why you had not done it long ago; I had my stomach washed out when I was sick five years ago, and it gave me a great deal of relief." This simply emphasizes that we should do whatever we know to be best, regardless of how we think it might impress the relatives.

Dr. Burruss: Mr. President and gentlemen, I have such a very high regard for Dr. Payne, and so much confidence in his ability, and such a regard for his opinion, that I always hate to differ. I feel that I am too little to take issue with the gentleman; but right down in my soul I believe that he is everlastingly wrong. In his soul he believes that I am

everlastingly wrong. A case came to me some time ago, a man that was distended extremely; it was easy to see that the infection had passed from the appendix; it was easy to see that general infection had taken place. This man had a pulse of 150; it was quick, it was jerky, it was wiry. The leucocyte count in this case only showed something like about 11,000. He had a subnormal temperature; he was vomiting incessantly. He was in intense pain, he was an awfully sick man; and had I operated on that man I believe in my soul that I would have lost him. But I didn't operate. I lifted his bed, I washed his stomach, I rewashed his stomach; I got his stomach clear just as soon as I could, and I endeavored to keep it that way. Next day I saw the leucocyte count going up to about 15,000; I saw the pulse steady down; I saw my patient was more comfortable; I saw the rigidity lessen, and I saw a little elevation of temperature. To me, that spells this: that, in the first place, I had a case that was so absolutely overcome with intoxication and with the colon bacillus, if you please, that it had entirely submerged my case, and that the opsonic index was so low that I did not get the increased leucocyte count; but when I gave my patient time to raise his opsonic index, and when I gave him time to increase his resistance, he did so, and the case was saved. I do not know, Dr. Payne, but that I might possibly have saved that fellow's life if I had operated immediately, but I have never believed that I would have, and the reason I don't believe I would have was just because of this one thing: when I used to operate on these cases presenting a similar picture every one of them died, and this fellow lives. And for that reason I believe it a better plan. I thank Dr. Payne for even condescending to discuss my paper.

Dr. Lott speaks of the vomiting as due to the nerve reflexes. While it is true that the reflex influence will produce pain and some vomiting, yet I have never seen a case of appendicitis but what vomited something; it was mucus, or it was foodstuff, or it was regurgitated intestinal substance; and I have never washed a stomach but what I always got something back if my patient was vomiting incessantly. For the reason that I get something back, I believe then that the stomach should be washed.

As to the normal salt solution, I don't believe it is wise to wash the abdomen or to wash the cavity by pouring salt solution into the cavity, because you distribute your infection and you doubtless force it into other fields where it would not get. Those of you who have tried to pour a dog's belly full of water and then turn that dog on its back and put a wick down in the dog's belly and try to drain that fluid out, are surprised to see that, if you will make another incision, the water has gotten in there, and you have another pocket of fluid that has not been drained.

Dr. Graham's idea is speaking the truth as I see it better by far than I could speak it myself, and I thank him very much for his remarks.

Dr. Lawrence, always in removing the appendix I think of it like this: After I get in the abdomen it is rather like scrapping a fellow; if I see he is a big fellow and I think he is going to lick me, I don't scrap him; but if I think that I can get around him and head him off, and I don't raise excitement sufficient to bring up his allies, then I will attack him. If it presents itself in the field, and is not hard to remove, and not hard to obtain, I think it is well to always remove it. In this connection I wish to say that a number of cases (or just a few cases) have come to me for a secondary operation, cases that had been drained, and they had drained, but they wanted to have the appendix removed. Frequently we will make the operation and find that that appendix had been beautifully operated on by nature. Through the process of sloughing gangrenous appendix had been removed through the pus, and there was no appendix left to remove. I wish to state that I thank you, also, doctor, for the discussion of the paper. Dr. Griffith's idea in handling these cases is exactly as has been my custom. I thank you.

PANCREATIC CYSTS, WITH REPORT OF CASE.

L. S. Booker, M.D., Durham.

The object of the following case report is to call attention to a condition which is not common, but of sufficient frequency to be borne in mind when making a diagnosis in an obscure upper abdominal condition. The first pancreatic cyst successfully operated was in 1882 by Gussenbauer. But the true father of this branch of surgery is Nicholas Senn, who in 1886 published his experimental and clinical researches which laid the foundation for rational surgical treatment of some of the diseases of the pancreas. Since 1900 our inspiration and guidance has come chiefly from the teaching and example of Mayo Robson.

The term "Pancreatic Cysts" has been used to describe any fluid tumor in or associated with the pancreas, though such tumors differ widely in causation, position, and clinical features. The following classification is as precise as our present knowledge permits: (1) Retention

Cysts, (2) Proliferating Cysts, (3) Hydatid Cysts, (4) Congenital Cystic Disease, (5) Hemorrhagic Cysts, (6) Pseudocysts.

Of the hemorrhagic variety I wish to report the following case:

Miss N. P., age 20, admitted to Watts Hospital December 25, 1914. Chief complaint, pain in epigastrium, nausea and vomiting. Previous personal and family history negative.

Present illness: Present trouble began three years ago, when patient fell across a ditch, striking her stomach against a rock. She had to be helped home and for several weeks complained of soreness in epigastrium; then began to suffer with indigestion, flatulence and discomfort after eating. About one year ago she first noticed a swelling in upper abdomen, which would disappear on lying down. Her symptoms of indigestion increased, and in addition she suffered sharp attacks of pain, followed by nausea and vomiting. She now vomits a great deal, and is more or less nauseated all the time, but has never vomited blood. Pain is aggravated by eating, and is not relieved by vomiting. Bowels constipated and appetite poor.

Physical examination: A fairly well nourished girl in great pain. Epigastrium very tender, slightly rigid, and presents a pulsating mass in middle line, slightly movable and partially disappearing under left costal cartilages. Mass feels symmetrical and is very tense. No bruit heard, not expansile. Stomach contents, urine, and feces negative. Blood hæmoglobin 80%, reds 4,500, whites 6,000.

Operation January 1, 1915: Upper right rectus incision, stomach, duodenum and gall bladder found normal. Cystic mass presented between folds of gastro-hepatic omentum. Lesser peritoneal cavity opened through gastro-hepatic omentum and mass found to have its origin to head and body of pancreas. Cyst was aspirated and greater portion of its walls excised. Drainage inverted and held in position by cat-gut sutures. The remaining cyst wall was inverted around tube and held by purse-string suture. Lesser peritoneal cavity closed around drain and abdomen closed to drainage in the usual way. Patient made an uneventful recovery, and was discharged on fourteenth day, cured.

Pathological report, by Dr. Kerns: The specimen consists of a symmetrical cystic mass about the size of a quart cup, the walls of which are thick and dense. The outer surface is smooth, with few adhesions. Inner surface smooth, with few organized blood clots adherent. Contents of cyst consists of a bloody fluid 500 c.c. in amount, with many blood clots in various stages of organization. The fluid is alkaline in reaction Spg. 1.028 with feeble property of digesting casein. Microscopically, the fluid contains many erythrocytes, few leucocytes and epithelial cells. Section of wall shows it to be formed of dense fibrous tissue, the inner surface of which is lined with cylindrical epithelia. Specimen belongs to the hemorrhagic variety of cyst of pancreas.

The fact that traumatism will give rise to pancreatic cysts receives ample confirmation from both experimental and clinical observation. Lazarus produced a cyst by crushing the pancreas of a dog, forming a hæmotoma which later became an encapsulated cyst, containing 100

c.c. of watery fluid. The same author reports eight cases arising apparently as a result of traumatism. Korte reports one hundred and seventeen cases, 30% of which were preceded by abdominal injury. As to age, most cases occur between twenty and forty, although Richardson reports a case in a child of fourteen months. Sex. Robeson and Cammidge say that true cysts are more common in women and pseudocysts more common in men. Korte statistics show almost equal incidence in men and women. Retention cysts are the result of chronic pancreatitis, so regarded by most authors. Calculi, tumors, chronic infections of duodenum and bile passages, duodenal and gastric ulcers have been mentioned as pathological lesions accompanying pancreatic cysts. Whether they cause both the cyst and the pancreatitis or whether the cyst results from pancreatitis is hard to determine. Robeson and Cammidge favor the latter supposition. Proliferating cysts are of two kinds, benign and malignant. Benign cysts have much the same characteristics as multilocular ovarian cyst adenomas. A few cases of malignant cysts have been reported. They occur as epitheliomas. Hydatid and congenital cysts are extremely rare and have but little clinical significance.

Pseudocysts are those in close proximity to the pancreas, but do not originate in the substance of the gland. They may involve the gland secondarily, and an accurate distinction of a true pancreatic cyst from a pseudocyst is not always possible. The majority of pseudocysts are, however, circumscribed collections of fluid in the lesser peritoneal cavity.

Diagnosis: From the description of this case it is evident that there are no pathognomonic symptoms or physical signs of pancreatic cyst. A history of injury is often an aid. Diagnosis depends largely on physical signs, and these may resemble those of growths of liver, kidney, suprarenal spleen, mesentery, or ovary.

Treatment: The treatment is essentially surgical. Aspiration was the treatment adopted in some of the earlier cases. It is contraindicated on account of the danger of peritonitis or perforation of one of the large vessels in the wall of the cyst. Complete extirpation is only occasionally possible. It is more difficult and has a higher mortality than incision and drainage, and is nearly always impossible on account of adhesions. Incision and drainage (marsupialization) is the most suitable operation in the majority of cases. If the cyst is large, the greater part of its wall should be excised and a rubber drainage tube inserted and held in place by cat-gut sutures and leakage guarded against by a purse-string cat-gut suture tied after inverting the walls of cyst around drainage tube. As a rule, granulation tissue will soon obliterate the cavity, but occasionally a small fistula will persist for years.

Dr. E. A. Lockett, Winston-Salem: As regards pancreatic cysts, I saw two cases in a clinic; one of them was of the acute hemorrhagic type, and the other was of the adenomatous type. Both were in women; both gave symptoms of acute attacks of nausea and vomiting. The first one was followed by a state of collapse. Both of these cases were operated upon; both were diagnosed before operation, both appearing in Dr. Deavers' clinic. In the first, the case of acute hemorrhage pancreatitis, a portion of the peritoneum covering the posterior wall of the duodenum was pushed forward, giving a mass larger than my fists; that was the case in which only the gall bladder was drained. The other, of the adenomatous type, had been previously operated on two years before. This I may say without any exaggeration at all was as large as a 5-year-old child's head, in a very thin woman. As in the other case, the examination of the urine and stomach and of the feces was negative. Dr. Deavers emphasized the fact that there was a negative examination of urine. He cut into the large cyst, which was just pushed right out from the gastro-colic omentum, and in cutting into it this just laid open one fold of the gastro-colic omentum. The numerous cysts were opened and he did a marsupialization (connecting the cyst wall to the abdominal wall), and draining the cyst. Both patients recovered.

Dr. Lockett: I move that Dr. Hanes of Richmond be accorded the privileges of the floor.

The courtesy of the floor is extended to Dr. Hanes.

Dr. Frederick M. Hanes, Richmond, Va.: It is possible, by the passage of an esophageal tube, to secure the contents of the duodenum. Now, if the duodenal contents are examined by very simple methods for lipolytic and starch-splitting ferments, one can frequently determine by these tests the functioning of the pancreas. It seems to me that in cases of cysts large enough to practically destroy the pancreas, examination of the pancreatic ferments in the duodenal juices will throw light on the diagnosis. So far as I am aware, the method has not been used. A few weeks ago I had a chance to use this method following an operation for cyst of the pancreas. The surgeon who operated was anxious to know the cause of a very severe post-operative diarrhea, and we made several studies of the duodenal contents to test for the presence of pancreatic ferments. They were present in normal amounts, so we decided the diarrhea was not due to abnormal pancreatic secretion. Any method which promises aid in the diagnosis of pancreatic disease is worthy of extended usage.

POST-OPERATIVE INTESTINAL OBSTRUCTION, WITH CASE REPORT.

A. DeT. Valk, M.D., Winston-Salem.

To consider post-operative intestinal obstruction in all its phases is almost too great an undertaking to cover in a brief article on the subject, and it is the writer's desire to touch mainly upon the functional form of this condition in connection with a rather interesting case report.

It happens to be not an infrequent complication following abdominal operations, and so often we are at a total loss as to means of prevention. It is rather amazing that we do not have to face it more often, all considered, and there remains no doubt that nature accomplishes wonders when judiciously assisted.

Etiologically post-operative obstruction is generally divided into two classes, namely, mechanical and functional; the latter implying the adynamic and dynamic forms of ileus.

The mechanical form is not only an immediate complication, but occurs weeks, months, and even years after operation. It might be brought about in various ways, but probably the most potent factor here is the result of a peritonitis with subsequent adhesions and constricting bands or the plication of intestines due to abraded areas or raw surfaces.

Adynamic ileus, as the name implies, is a deficiency of the vital power of the intestines themselves, and is caused by any condition interfering with intestinal mobility, either local or reflex. Locally probably peritonitis is the most common factor. Reflexly, of course, no definite cause can be determined, but it is not uncommon as the result of trauma and overexposure of the intestines at operation. Shock is also an important factor.

In the dynamic or spastic type of ileus there is a spastic contracture of a segment of intestine, giving rise to obstructive symptoms. In the true reflex functional ileus the paralysis or spasm may be of peripheral or central origin, and Behan[1] believes that the spastic contracture is the result of vagus stimulation or inhibition of the sympathetic nerves, while the paralytic form is just the opposite, being due to inhibition of the vagus or stimulation of the sympathetics.

Kocher[2] claims that in most cases of so-called dynamic ileus, meaning the paralytic as well as spastic, the condition is by no means purely a functional disturbance, and that there are practically always light mechanical hindrances which lie in the background.

We see transitional stages of reflex paralysis of the gastro-intestinal tract following operations from the mildest grade of distention to the gravest form of ileus. Acute dilatation of the stomach is no doubt a manifestation of this same reflex paralytic condition. That this state is mainly a reflex paralysis is well shown in a certain group of cases in which the peritoneum is not opened and we have an adynamic ileus following.

Here we are dealing with a condition, the cause of which is more or less speculative, that makes it more than difficult to combat. However, we realize that it frequently follows in certain cases, especially after operations necessitating extensive handling of the intestines, and one may reasonably anticipate its development and institute early treatment.

The mortality is rather high, one writer reporting 60 per cent in a series of ninety cases.

Just what brings about the so often rapid exitus in these patients is not definitely understood, but probably the recent work of Whipple, Stone, and Bernheim[3] throws more light on the subject than any other work of late years. These authors tend to lead us to believe that death in intestinal obstruction is due to an intoxication. They have shown in dogs that "isolation of a loop of duodenum or jejunum by double ligature and reëstablishment of the continuity of the alimentary tract is rapidly fatal." "The toxin is supposed to be formed by the mucosa of the closed loop, and absorption takes place, not only from the loop contents, but also from the mucosa direct." Further: "The fluid contents of the isolated loop when injected into a normal animal produces a reaction similar to that of the dog with closed loop." Drainage of loop in many cases will relieve condition, but this is not constant.

Hartwell[4] fails to find evidence to justify the claims made by the above quoted authors, and believes that while there is no doubt a toxin produced, this is brought about by altered condition of mucosa as the result of circulatory disturbance. He further considers that marked loss of body fluid with fall of blood pressure and its effect upon cerebral circulation the main factor in producing death.

McLean[5] agrees with Hartwell (after a series of animal experiments), and is more in favor of the theory of disturbed cerebral pressure due to loss of body fluids as cause of fatal termination.

All of these corroborate the general finding that disturbances are more pronounced following the formation of loops in the duodenum and high jejunum and become markedly less as one approaches the colon. These experiments are, of course, dealing with mechanical obstruction, but are readily applicable to a certain extent to the functional form.

The diagnosis in most cases is easily made, and from the character of onset, symptoms, etc., one can generally differentiate between the mechanical and adynamic form. As a rule, the latter comes on quickly—within forty-eight hours after operation—but not always can it be distinguished from a beginning peritonitis. In the absence of sepsis, however, with a sudden onset, in an apparently favorable post-operative course, distention, nausea, and vomiting and absolute cessation of peristalsis, its nature can be suspected. Pain is not colicky in character and collapse is likely to follow.

In the way of treatment, it seems to be generally unsatisfactory. Immediate supportive measures should be instituted. Saline infusions are no doubt helpful. Gastric lavage, hot applications to abdomen and stimulating enemata should be tried. Strychnia, eserin, atropin, and pituitrin are advocated as means of influencing peristalsis. Peiser[6] claims satisfactory results with use of harmonal.

Medical treatment should, of course, be instituted in all cases for a certain time, and this is measured by the individual's response to such treatment. Further measures should be surgical, and an enterostomy quickly done will save, in many cases, what is apparently a hopeless condition. This can be done through original incision by simply opening the same and bringing up and opening the distended bowel. Many times this procedure can be carried out under local anesthesia.

It is a question as to whether or not we too often prolong the expectant treatment beyond all hopes of saving our patient.

The subsequent course, after enterostomy, is not without danger and risks of skin digestion and starvation, but the immediate danger of rapid toxic death is a more pressing consideration.

The pulse is probably the best criterion as to the condition of patient, and where we find no amelioration of symptoms with medical treatment, and a gradually increasing pulse rate, one should resort promptly to enterostomy before serious toxemia intervenes.

In the evolution of medicine on the whole, especially the present era, the greatest efforts that have been put forth have been those in the direction of prevention, and here we find a condition in which prophylactic measures are to be most seriously considered. More careful consideration of temperament of patient, because it is frequently in nervous, apprehensive individuals that we see this complication. Emphasis may be laid on the prevention of shock, and here may be mentioned the use of novacaine and quinine and urea, in abdominal incisions, as well as the choice of anesthetics. Proper preliminary preparation of the gastro-intestinal tract before operation; more careful consideration of tissues,

especially the peritoneum and viscera, during operation, and early institution of supportive treatment during or immediately after operation should be observed.

In connection with this brief consideration of post-operative obstruction, I want to report the following rather interesting case:

T. C., male, age 7. Operated upon on August 1, 1914, for acute perforated gangrenous appendix, with localized peritonitis involving the entire right lower quadrant. This was done through a lateral "muscle-splitting" incision, appendix removed, and free drainage instituted. He made a rather slow recovery and was discharged thirty days after operation.

Ten days after leaving hospital he returned with an acute intestinal obstruction. He was again operated upon and through a right rectus incision a small obstructing band of adhesions was located across the ileum (about ¾cm. from the ileocæcal junction) and relieved. The patient's bowels moved while on the table, and he recovered almost immediately. Pulse dropped from 140 to 120, distention subsided, and there was marked improvement in general condition for about twenty-four hours. During this time there was one evacuation of bowels by means of an enema. On the afternoon of the following day—that is, about thirty hours after operation—he complained of distention of abdomen, nausea, and frequent eructation of gas. Pulse rate increased, reaching 140 in short time, and within a few hours there was marked intensification of all symptoms. Abdomen became greatly distended, nausea and vomiting constant, and there was no further movement of bowels. Temperature 97.5, pulse 150, quite restless, and there were signs of a pending collapse.

Under light anesthesia the lower angle of the right rectus incision was opened, the first loop of distended bowel presenting brought up, attached to peritoneum and immediately opened, with the evacuation of a great deal of gas and fecal material. Patient recovered on table. Pulse improved; distention subsided, and there was marked relief of all distress. For the following ten or twelve hours he was quite comfortable, and during this time there was considerable drainage from enterostomy. This, however, became less as time went on, and at the end of twenty-four hours he ceased to drain through opening. There was a rapid return of all the previous symptoms of ileus: temperature 97, pulse 160, and weak, marked distention, nausea, and vomiting. In fact, patient was apparently in worse condition than on former occasion and markedly toxic. On both occasions every effort was made to relieve the condition by means of gastric lavage, hot applications to abdomen, stimulating enemata, eserin, strychnia, etc., but all apparently in vain; so again, under light anesthesia, a second enterostomy was done, this time opening the upper angle of the right rectus incision. A large amount of gas and intestinal contents expelled. Consciousness was soon regained, but it was difficult to get any response to stimulation for twenty-four to forty-eight hours following. Temperature remaining subnormal and pulse ranging between 140 and 150.

After the second enterostomy there was free drainage of intestinal contents, not only through the upper, but also through the lower openings after twenty-four hours. It was soon found that the drainage from the enterostomies was

causing excoriation of the skin over the abdomen, so a continuous tub was used during the day and dressings changed frequently during night.

Ten days after second enterostomy a normal movement of bowel was obtained by means of an enema and following this a normal evacuation every other day.

The lower enterostomy gradually closed to small size, while upper remained open and drained free. On November 10th, eight weeks after second opening was made, patient was again operated upon and upper fistula closed with a very happy result. The lower opening has gradually closed, and from all reports he is doing well, with a normal bowel movement daily. Of course, there is always the possibility of subsequent trouble in this case.

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[2]Kocher; "Uber Ileus," Mitt. a. d. Grenzgeb. d. Med. u Chig., Jena, 1908, iv, 195-230.
[3]Whipple, Stone, and Bernheim. Annals Surg., May, 1914.
[4]Hartwell, J. A. J. Exp. Med., 1913, xviii, 139.
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SOME GASTRO-INTESTINAL CASES, WITH CLINICAL REPORT.

C. S. Lawrence, M.D., Winston-Salem.

In studying the mass of literature written upon the gastro-intestinal tract, it would seem that nothing of importance could be added at this time, and in my short paper I shall not try to put forth any new ideas, but simply report two clinical cases of gastric surgery that have come under my observation recently.

As we go over the work of the leading men of this country and of Europe, one finds ideas in common with all of them, and other principles in which some of them quite differ. Coffees' work on gastro-inter-optosis is epoch-making, but we find a great many men who disagree with him. Lane says that the colon is the case of all ills except cleft-palate. Moynihan says that the cause of a great many gastric symptoms may be found in the right lower quadrant, and has called attention to the gall bladder and appendix being simultaneously affected.

While there is much written and much work being done, we must not stop, but continue on to the goal idea, for, as I heard Moynihan in his London address on intestinal stases say in reference to the great amount of work being done along this line, out of much that is dross there is a nugget of pure gold. In my own experience, and in observing the clinics

of others, I have been impressed with the tardiness with which cases of gastric and duodenal ulcers come to operation. I believe that these cases should be given a chance to be cured medicinally; but after a month or so of such treatment, if they are not cured, I believe they should be referred to the surgeon. The recurrence of the so-called cured cases, I believe, should also be referred to the surgeon for treatment. How often is it that we have cases of epigastric trouble come to us saying that they had been cured three or four times by as many stomach specialists! Let me report a case here:

Case 1.—Male, white, age 38; by occupation a merchant; born in North Carolina and has always lived in the State. Fifteen years ago he began to have pain in the epigastrium two hours after eating. The pain was not so severe at first, but grew worse within a year or two. He did not vomit, but had sour stomach; eructations of hot burning fluid. He grew better and worse until five years ago, when he was treated by a stomach specialist, who said he was cured, and he was much better for a time, but soon got worse with the pain after eating, which was relieved by certain kinds of food which he carried with him. The sour stomach and hot fluid was more troublesome, and he often resorted to the stomach tube for relief, and says that he has often removed food material from the stomach that he had eaten twenty-four hours previously. Patient is very nervous, constipated, and has lost considerable weight within the past year or two.

Physical examination: Expression pinched and anxious; teeth are bad, mild form of pyorrhea; tongue large and indented by the teeth and coated with thick mucus; chest well formed, lungs negative, heart normal in size, apex murmur, systolic in time, not transmitted. Abdomen scaphoid, tender over entire abdomen; more so on right side from brim of pelvis to costal margin; great deal of gas in the intestines.

X-ray examination: Stomach large, extending to promontory of sacrum constriction grater-curvitures, giving hour-glass appearance. Twelve-hour residue; diagnosis, ulcer lesser curvature.

Operation February 11, 1915: Laparotomy through right rectus incision above umbilicus. The stomach was found to be quite large, the pars pylorica in the left iliac fossa; all the intestines were in the pelvis; the cæcum was large and very movable; had a hard, chronically inflamed appendix attached to it; on the anterior wall of the stomach near the lesser curvature was found two large ulcers, each of which had a tag of omentum adherent to it. The ulcers were turned in with linen thread and a gastro-enterostomy retro calica performed, the appendix removed and the cæcum plicated.

Patient left the table in good condition; post-operative history uneventful; did not vomit but one time; the morning after the operation he vomited small quantity of bile stain fluid.

May 20, 1915. Patient has gained 15 pounds in weight and feels well, attending to business, and X-ray examination shows gastro-enterostomy opening patulous and functionating properly.

Think what it would have meant to this man's life had he been saved all these years of suffering and loss of time from his business, and how much more pleasant his home life would have been had he been able to enjoy his supper and romp with the kiddies instead of a pain in the belly and a nervous feeling as though he would tear their heads off every time one dared to make a noise. A gastro-enterostomy has relieved him now. Why could it not have done so fifteen years ago? I say it would and should have been done. He has been a neglected case up to this time.

Let me report a case at the other end of the line.

Case 2.—Male, white, age 31; by occupation, bookkeeper. In July, 1914, he had an attack of general abdominal pain, followed by nausea and vomit, with rise of temperature; his attack did not keep him in bed, but he suffered pain four or five days and got better. One month later he had another attack. This time the pain was in the epigastrium. Since July he has had pain every day, coming on four hours after eating. Pain is relieved by taking food. He has eructations of sour fluid which burns his throat; he has lost weight, grown very nervous, and is constipated.

Family history: Negative; previous health good up to last July.

Physical examination: Teeth in good condition; tongue slightly swollen, indented by the teeth, coated with tenacious mucus; chest negative. Abdomen rigid all over, more on right side than on left; just below the costal margin near the median line is a tender spot; with the slightest pressure the patient yells with pain. The region of the appendix is also quite tender and the muscles are very rigid.

X-ray examination: Stomach normal in size and position; slight constriction first portion duodenum hyperperistalsis; six-hour residue in duodenal cap. Diagnosis, duodenal ulcer.

Operation on May 1, 1915: Laparotomy right rectus incision above umbilicus. A large duodenal ulcer was found, involving the top and anterior wall of the duodenum. A tag of omentum was adherent to the ulcer. These adhesions were freed and the ulcer turned in with linen thread and a posterior gastro-enterostomy performed. The appendix was adherent and contained an enterolith, the caput coli covered with a Jackson membrane; the appendix was removed.

The patient was on the table one hour and fifteen minutes and left it in good shape. Three hours after the operation patient vomited large quantity of blood; one hour later vomited blood again; five hours later vomited four ounces of dark blood. At this time the patient began to show signs of hemorrhage in the pulse and pallor of the skin, and I was quite anxious about him, knowing that I had placed three rows of linen sutures in the posterior layer and two rows in the anterior layer. I felt confident that the hemorrhage was coming from the ulcer that I had turned in. While thinking of the best course to pursue in order to save my patient, I happened to think that I had a sample of "Coaguline Ciba" that an agent had left me, and I dissolved the contents of the sample bottle in a glass of water and let him drink half of it. He re-

tained the mixture thirty minutes and vomited five ounces of bloody fluid containing two large clots. At this time the pulse was 143, temperature 99, patient very restless. Normal salt drop method by rectum was started with the remainder of the Coaguline Ciba in the salt solution. This was kept up until 500 c.c. had been taken. From this time the patient did not vomit again and within six hours the pulse came down to 118, and the patient made a rapid recovery and is feeling fine at this writing.*

Had this man gone on many months longer, there is no doubt that he would have been the same physical wreck that Case No. 1 was.

As to the diagnosis of gastric and duodenal ulcer, it is simple, and with the instruments of precision at our command, combined with the clinical symptoms, diagnosis should be made with great accuracy. These cases complain of actual pain in the epigastrium, occurring always at the same hour after eating in each case—may be one hour in Case A and three hours in Case B, but will always occur at the respective hour in the given case. The pain is usually relieved by taking food in the way of milk cracker, hard-boiled egg, or by taking bicarbonate of soda. In the ulcer of the duodenum the pain does not occur, as a rule, for some time after eating, say, three to five hours; sour stomach, hot fluid in the mouth, etc.

Hemorrhage is less constant and less reliable as a diagnostic sign, as is also the test meal, as many cases of gastric and duodenal ulcer show a normal acidity.

The tender point over the seat of ulcer, with jaundice at times, loss of weight (for a great number of these patients are afraid to eat because of pain), constipation, and nervousness.

X-RAY EXAMINATION.

The necessity of a standard method of examination has been urged by Carman of the Mayo clinic, which Dr. Whittington and myself have followed in our work, whose technic may be defined as the combined fluoroscopic and skiagraphic examination with double opaque meal. Barium sulphate is used in the six-hour meal, and at the time of the examination the patient is given bismuth subcarbonate in buttermilk.

"As seen at operation, four classes of gastric ulcer may be distinguished: (1) Small, exceeding shallow mucous erosions and slit-like ulcers; (2) Penetrating or callous ulcers, with relatively deep craters; (3) Perforating ulcers with or without accessory cavity formation; and (4) Very early carcinomatous ulcers.

"Of these four classes, the first, the small shallow erosions, offer the greatest difficulty of röntgenologic detection. They are either superficial denudations

*X-ray examination June 2, 1915, shows gastro-enterostomy opening patulous and functionating properly.

or mere slits in the mucosa, incapable of holding enough bismuth to make a visible niche. Unless accompanied by an incisura or a six-hour rest, their presence will hardly be even suspected, much less positively determined.

"The penetrating ulcers which have burrowed more or less deeply into the gastric wall show a definite crater, which may be either quite round, oval, or irregular. The degree of the facility with which the crater can be seen by the Röntgen ray as a niche depends upon its size and location.

"Perforation of an ulcer and a continuation of the destructive process into an organ or tissue results in the formation of an accessory cavity. Perforation may, of course, occur without the production of a pocket. In this event the radiologic signs are like those of callous ulcer, plus, in some instances, the distorting effect of adhesions.

"The very early carcinomatous ulcers are not, as a rule, distinguishable microscopically from nonmalignant ulcers. Their Röntgenologic signs are not different from those penetrating or perforating ulcers.

"The positive radiologic diagnosis of gastric ulcer can only be based upon presence of one of two signs, namely, the niche or the accessory pocket.

"Other signs which are corroborative but not diagnostic of themselves are: (1) the incisura, (2) hour-glass stomach, (3) residue in stomach after six hours, (4) lessened mobility, (5) localized pressure-tender point, (6) delayed opening of the pylorus, (7) acute fish-hook form of the stomach with displacements to the left and down, (8) gastric hypotonus, and (9) anti-peristalsis.

"A distinct residue from the six-hour meal amounting to an eighth or more of the quantity taken is a relatively common accompaniment of gastric ulcer. Its most common cause is the pylorospasm which frequently accompanies ulcer, but in the case of an ulcer at or near the pyloric region obstruction from scar contraction may be responsible.

"A six-hour rest is by no means an exclusive indication of ulcer, since it may occur in any obstructive condition, including carcinoma, duodenal ulcer, and pericholecystic adhesions, as well as reflex from conditions outside the stomach.

"The Röntgenologic signs of ulcer differ so much from those of carcinoma in the vast majority of cases that differentiation requires no effort at all. For example, a callous ulcer with niche and incisura, or a perforating ulcer with pocket formation, has no radiologic resemblance whatever to a well developed carcinoma, either scirrhous or medullary, and such cases make up the bulk of those patients coming for Röntgen ray examination. In a general way ulcer defects always project from the gastric contour, while in carcinoma the growth with its resultant irregularity extends into or encroaches upon gastric lumen. Between the typical cases and the typical carcinoma, however, there is a small percentage of cases in which röntgenologic differentiation is impossible. These are the border-line cases, in which carcinoma cells are found in the ulcer. In such instances the Röntgen signs are chiefly those of the ulcer, and the lesion is usually not determinable macroscopically.

"Extreme size of an ulcer-crater as shown by a large niche should make one suspicious of malignancy, a fact which Carman has had impressed upon him by experience. He says a niche three or more centimeters in diameter is apt to show microscopic signs of carcinoma.

"Differentiation of pyloric ulcer from pyloric carcinoma is most difficult. Here, in either event, the only radiologic signs may be a six-hour rest and a typical irregularity of contour, and the röntgenologist can only say with certainty that a lesion exists."

DUODENAL ULCER.

Superficial acute ulceration of the duodenum may give no definite evidence röntgenologically. Even at laparotomy these superficial lesions of the mucous membrane may not be felt, and may be overlooked unless the duodenum is incised and inspected. Cases of fatal hemorrhage have been reported soon after laparotomy which failed to reveal duodenal ulcer diagnosed clinically or radiographically.

Chronic ulceration of the duodenum may be diagnosed with extreme accuracy by several methods, as follows:

According to Carman's experience at the Mayo clinic:

"The röntgenologic indications of duodenal ulcer, which have been frequently catalogued by various observers during the past two years, may be divided into major and minor signs:

"The major signs are:

"1. Gastric hyperperistalsis.

"2. A residue in the stomach (sometimes in the duodenum) after six hours, if there be obstruction from scar contraction.

"3. A divericulum of perforating ulcer.

"The minor signs are:

"1. The gastric hypermotility with early free opening of the pylorus and speedy clearing of the stomach.

"2. Gastric hypertonus.

"3. Irregularities on the outline of the cap or bulb, or of the duodenum.

"4. Lagging of bismuth in the duodenum.

"5. Pressure of tender point over the duodenum.

"6. Spasm of the stomach, such as hour-glass or slowly traveling incisura.

"Of all the radiologic signs of lesion of the digestive tract, the presence, after six hours, of distinct residue from the barium or bismuth meal is perhaps the most important. The radiologist feels assured that almost without exception such residue signifies an organic lesion, whether or not all his diagnostic deductions be confirmed. Theoretically, a residue may remain in simple atony, but of the cases in the Mayo clinic with residue which came to operation, every one was found to have some condition requiring surgical intervention.

"A residue in the stomach from the barium or bismuth meal six hours after its ingestion occurs in a large proportion of cases of duodenal ulcer. This is often loosely spoken of as being due to pyloric obstruction, whereas the obstruction is actually in the duodenum and is produced by ulcer scar contractions. Occasionally there will be found not only six-hour residue in the stomach, but also a six-hour residue in the duodenum above the stenosis, thus enhancing its diagnostic value. A six-hour residue may, however, also be

found in the stomach as a result of gastric ulcer or carcinoma, or thickening of the pyloric ring. A six-hour residue in the duodenum may result from bands of adhesions, or from the pylorospsasm incident to gall-bladder disease.

"Hyperperistalsis in conjunction with six-hour residue is worth more than 95 per cent in diagnosis.

"The exaggerated peristalsis of duodenal ulcer does not appear to be related to the degree of hyperacidity. The average total acidity in eighty cases with hyperperistalsis was 67.7 per cent, while in seventy-two cases without hyperperistalsis the average total acidity was 74.8 per cent. The highest acidity noted, 120 per cent, occurred in a case with normal peristalsis.

"Though the Röntgen ray often fails in the positive diagnosis of duodenal ulcer, its findings have an exclusion value: that is to say, the chance of some other lesion existing is minimized in proportion as the latter is radiologically determinable.

"Hypermotility, hypertonus, deformity of the cap or bulb, lagging bismuth in the bulb, pressure tender over the duodenum and spasm of stomach are minor contributory radiologic signs of duodenal ulcer. The combination of hyperperistalsis and six-hour residue or a diverticulum, when found in an otherwise normal stomach, constitute about the only evidence on which a purely radiologic diagnosis of duodenal ulcer may safely be advanced."

According to Case:

"Defects in the duodenal bulb constitute one of the chief röntgenographic means of recognition of duodenal ulcer and its complications. Filling defects in the duodenal shadow, to be interpreted as ulcer, should be differentiated from the normal defects due to hepaticoduodenal ligament and the deformities of the bulb, due to extraduodenal pressure, as, for instance, gall bladder, blood vessels, second portion of the duodenum, etc. The defects due to gall-bladder region adhesions are very characteristic; the defect occurs on the gall-bladder side of the bulb shadow, but the bulb is otherwise anatomically normal."

In conclusion, let me say that with the diagnostic methods that I have outlined, at our command, one is not justified in allowing his patient to go on from year to year suffering with gastric trouble without finding the facts in the case and the proper treatment advised.

Seventy-two per cent of the cases of gastric carcinoma operated at the Mayo clinic have their origin in gastric ulcer. Early diagnosis and the proper treatment would save these cases. Let us be more considerate of the nervous dyspeptic, and instead of dismissing him with a prescription, let us give him a bismuth meal and take a look at the movies, that we may see something of interest to us and of great value to the patient.

Dr. H. S. Lott, Winston-Salem: Duodenal ulcer is a matter of a great deal of importance, chiefly because it attacks so often young men in the prime of life. A case impressing this fact upon me very forcefully was

one in which a young man was attacked with violent pain soon after a hearty breakfast. The previous attacks had been mild, though the indigestion had been constant. My diagnosis was of an acute appendix, with a likely perforation; and after a great deal of persuasion the patient was taken to the hospital. After much delay, and a constant increase of alarming symptoms, the usual appendix incision was made, the cæcum found fixed by many strong bands, and the appendix containing an enterolith, much distorted and fastened to its wall. The absence of active inflammation at this point, and the evidence of some leakage from some other, caused me to enlarge my incision and continue the search; but the distention was such, and condition of the patient such, that it was not found.

The case ended fatally, and in reviewing the entire history as it has since come to my knowledge I feel very sure that there was a duodenal ulcer which had existed for some time, and that the perforation of the onset had occurred at that point.

This also emphasizes, to me, the importance of the blend of "right-sided pain" in men, as well as in women. We may consider in them the appendix, gallstones, perforating duodenal ulcer, and a failure of resorption of the vessels passing from the umbilicus to the liver, and other structures, thus forming permanent and painful guy-ropes, which may persist throughout a lifetime.

Dr. Lawrence (closing discussion): I thank you for the discussion. I have been impressed in my brief experience with the eagerness with which a great many surgeons go after certain conditions; for instance, a chronic appendix comes into a surgeon's office, and he cannot get it out too quick. A chronic ulcer comes, and he refers it to the stomach specialist. Now, my first case that I reported was a very pitiful one, a well educated, cultured man, who lost out in life simply because his fire-box had burned out. He couldn't get up steam. He was running a little second-hand furniture store, trying to make a living for his wife and six children. This fellow carried a stomach tube with him all the time. He would let things stay in a little while, then pump them out. An old doctor told me, "His stomach is like a Scotch bagpipe; he can press on it and make all kinds of music." His stomach was very large and right down in the pelvis, and he had constriction just above the pylorus, giving an hour-glass contraction. This is due to the ulcer in the lesser curvature, causing contraction of the muscle bands around the stomach.

I made a very large gastro-enterostomy opening, and the man got along beautifully from the very start, and went home and went to work. He

eats well now and seems to enjoy it. He has gained fifteen pounds in weight. I think it is the duty of surgery to pay as much attention to one patient as to another. Why should we grab a chronic appendix simply because it is easy to take it out?

Gastro-enterostomy does not always cure gastric and duodenal ulcers, but I believe it is up to the surgeon to work out the cure for these cases, just as it is up to the surgeon to work out the cure for metastatic arthritis.

SYMPOSIUM ON CANCER.

THE PERCY CAUTERY IN TREATMENT OF CARCINOMA OF THE UTERUS.

Dr. Everett A. Lockett, Winston-Salem.

It is taken for granted that carcinoma of the uterus is admittedly a surgical condition only. This paper is not intended to be exhaustive, but to bring before you for consideration a comparatively new technique for treatment of carcinoma of the uterus.

I will not take up your time by picturing to you the horribleness of carcinoma of the uterus—both to the patient herself and, in the later stages, to the members of the family; this all of us can recall only too well. Neither do I come before you to exploit an absolute panacea for cancer of the uterus; but to give you what is considered by many eminent men to be the last work in the treatment of uterine carcinoma, in the technique which gives promise of being thus far the nearest approach to the successful treatment of this condition.

Frankly, I confess to you that the first time I heard of the Percy Cautery was during the past fall while taking a post-graduate course, and as the rationale of the treatment appealed to me I began to investigate, and was greatly pleased to find it so well thought of, and so widely used, particularly by Crile at Cleveland and at that most wonderful surgical proving ground, the Mayo clinic. Just here I want to add that it is so well thought of by the Mayos that several members of the staff said that it has thus far caused them to look upon many cases of cancer of the uterus, heretofore considered inoperable, as possibly operable. While there I was told that Dr. Percy was the only outsider ever asked to operate in the Mayo clinic; which he did, demonstrating the use of his cautery.

The Percy Cautery was devised and introduced by Dr. G. F. Percy of Galesburg, Ill. In order for one to be justified in trying a new technique we are safe in demanding that it fulfill the following requirements:

1. The object shall be to ameliorate human suffering.

2. It should have legitimate claims based on an established scientific principle.

3. It should have assurance that the method gives hope of doing more good than any thus far known; at the same time does no harm nor aggravate the condition.

Now, gentlemen, with your permission I shall endeavor to show that the Percy Cautery Technique fulfills the above requirements.

The older men among you will recall that before the development of aseptic surgery it was a matter of comment that a case of carcinoma of the uterus operated on, where part or all of the uterus was removed, and the patient developed erysipelas during convalescence, if she survived the erysipelas she was slower to have a return of the carcinoma than those cases operated on which did not have erysipelas. It was further observed that in excessive bleeding in inoperable cancer where the internal iliacs were ligated to check the hemorrhage, notwithstanding the marked discoloration of the tissues of the areas supplied by these vessels (which persisted for twenty-four hours), the growth often subsided for many months, during which time the patient was almost in normal health.

In the first instance cited above there were two factors working to retard or inhibit the growth of the cancer. A general or constitutional factor represented by the high temperature of the erysipelas, and the local one, by the overgrowth of connective tissue in the scar. For years it has been a matter of observation that all tumorous growths are arrested, temporarily at least, when for any cause the patient is subjected to high temperature. In the second instance the growth was probably retarded on account of the cancer cells being of such low vitality as to be unable to undergo the starvation from the temporarily arrested blood supply and were largely killed by the time the collateral circulation was established at the end of twenty-four hours.

Again, the pathologist and biologist have established the fact that cancer cells are of considerably lower vitality than normal tissue cells, and are destroyed by means which do not apparently affect the normal cells, towit: It has been shown that cancer cells are destroyed in a comparatively short time (from ten to twenty minutes) by temperatures of from 111 to 120 degrees F., whereas normal cells are apparently not affected by this temperature.

It is generally admitted that cancer is primarily a local disease, and is not a constitutional or blood disease. Metastasis takes place through a direct entrance of cancer cells into the blood vessels and lymph channels. This fact can be demonstrated by making serial sections through the cancerous material into the neighboring tissues. Now, when an attempt is made to remove the growth by the scalpel, curette, or an eschorotic, it necessarily follows that some cancer cells will be transplanted into the injured blood vessels and lymph vessels, thereby aggravating instead of relieving this condition.

So far, the best treatment for uterine carcinoma has been the Wertheim operation, removing the entire organ and adjacent pelvic lymphatics. But only too often in a vast majority of the cases is there a return of metastasis due to the unavoidable implantation of the cancer cells into the open-vessel mouths by means of the scalpel.

Consequently, the ideal treatment is one whereby the cancerous growth can be inhibited or destroyed before the Wertheim is done; and herein lies the efficiency of the Percy Technique.

The use of the actual cautery has been in vogue for many years, but its main drawback has been the injury to the adjacent normal tissues, limiting its action to the immediate area of its application. The heat, being applied for a very short time, had very little penetration.

*"The basic idea of this treatment—and this cannot be too often emphasized—is not cauterization, but the production and dissemination of heat in the gross primary mass of cancer."

In brief, the idea is to destroy the cancer cell by means of heat. It would, of course, be impracticable as well as dangerous to raise the entire body temperature up to 104 or 105; consequently the heat is applied locally in the uterus. The amount of heat is regulated by rheostat, and you are able to get heat penetration into the tissues, and this penetration is further augmented by the heated juices of the uterus. You thoroughly cook to well done the cancer cell, both in the growth and adjacent tissues, which can be accomplished at a lower temperature than will affect normal tissue cells.

Of course, you can bring the iron to a higher heat at first and remove the cauliflower masses, or so sear the outer parts as to check hemorrhage, then lower the heat in the iron and proceed to cook the remote cancer cells.

Now, as for the technique proper for the use of the Percy Cautery in the treatment of carcinoma of the uterus:

1. The patient is prepared for an abdominal section.

2. Anesthetized, placed in an exaggerated Trendelenberg, with the thighs flexed so as to get all the intestines out of the pelvis.

3. The vagina is dilated and a water-cooled speculum introduced.

4. An abdominal incision is made sufficiently large to admit the hand. The hand not only explores the pelvis to determine the amount of involvement, but acts as an index to the temperature in the pelvis, and guides the cautery to the different parts. The average gloved hand being able to stand the temperature of from 111 to 120 degrees for ten or fifteen minutes, there is sufficient temperature and time to destroy the cancer cell and not injure normal tissue.

The cautery, previously heated, is introduced into the cervix, first burning off the exuberant masses if present, then introduced into the body of the uterus and maintained at the proper temperature. The cautery is moved from place to place in the uterus as the abdominal hand directs.

*"The important thing is not to convert the pathology into charcoal. The charcoal or carbon thus formed inhibits the further dissemination of heat, not only through the cancer mass, but beyond. More than this, when the pathology is converted into charcoal, drainage is prevented for a number of days. This permits of the absorption of a larger quantity of broken-down cancer cells than the average of the patients can tolerate, and many of them die as a result of this mistaken method of applying heat. Carbonization is produced in a few minutes by a cautery heated to a bright cherry-red color. Carbon inhibits the dissemination of heat. To overcome this, still greater degrees of heat are required, which are extremely difficult to control, endangering the rectum, the bladder, and the ureters. The heating iron, when used through the water-cooled speculum, should not be hot enough to scorch a pledget of white cotton if laid on the heating iron even for half an hour. No smoke or smell of burning tissues should issue from the speculum as would occur if they were being carbonized. The ear placed near to the speculum should hear only a gentle simmer or bubbling while the heating head is in the diseased mass."

It is desired that about forty minutes be consumed in this treatment, when the abdominal incision is closed, cautery removed, patient put to bed, and if considered an operable case at the end of four weeks, the Wertheim operation is done.

When this Percy Technique is decided upon—

*"I would strongly advise against the use of the curette or other operative measures, for the reason that the heat is distributed through the medium of the pathological overgrowth which we wish to destroy. Heat does not encourage the extension of metastasis, while the curette

*"The Treatment of Inoperable Carcinoma of the Uterus by the Application of Heat," by G. F. Percy, M.D. Reprinted from *The Lancet*, Aug. 1, 1914.

and knife do. Again, scar tissue is not formed after the use of the curette, but is the usual sequel after the application of heat, and I have yet to observe the redevelopment of cancer in cicatricial tissue. In a personal case where this treatment was applied to an active, stinking, bleeding, vegetative-like mass, springing from the craterous edges of a practically destroyed cervix uteri, no evidence of carcinoma was found on serial section eight months afterwards, when the uterus and cervix were removed through the abdomen."

Now, let us see if the Percy Cautery Technique fulfills the three requirements mentioned above:

1. The object should be to ameliorate human suffering. Yes, for it removes the exuberant growth, checks hemorrhage, checks the discharge and irritation therefrom, lessens or removes the odor from the sloughings from this mass, and last, but not least, relieves the pain.

2. It should have legitimate claims based on established scientific principles. As mentioned above, the cancer cells are destroyed at a lower heat than that required to injure normal cells. The temperature is maintained for any length of time in the Percy Cautery by means of a rheostat.

3. Should have assurance that the method gives hope of doing more good than other means thus far known. At the same time does no harm, and does not aggravate the condition. The regulated heat kills the cancer cell without injuring the normal cell, this being thus far the only means known which will effect this change in the deeper tissues. So enabling one to subsequently do the Wertheim, working through either scar or normal tissue. It does no harm, because the heat is not high enough to actually burn, thereby producing the various fistulæ. It does not aggravate the condition, because the cells are killed before the vessels are opened.

Finally, gentlemen, so great is my confidence in this technique being used by such men as above mentioned, that I feel that I am at present justified in saying that the Percy Cautery Technique is clearly indicated in all cases of carcinoma of the uterus, whether inoperable or not, and have no hesitancy in using it as the occasion arises.

SARCOMA OF BONE, WITH CASE REPORTS.

J. F. Highsmith, M.D., F.A.C.S.
R. L. Pittman, M.D.

The purpose of this paper is not to develop anything new in this disease, its pathology, diagnosis, or treatment, but, on the contrary, will deal most especially with the primary cause of the malady. In the South, where there is comparatively little manufacturing as compared with that in the North and all large manufacturing centers, exposure to trauma is slight as compared with the greater frequency of bone injury where this industry is more abundant. W. B. Coley of New York City, of whom every one knows, from the importance of his serum in this disease, has within the past thirty-five years treated between eleven thousand and twelve thousand cases of sarcoma, while the average surgeon in this country does not see so many cases. We have treated within the past three years six cases, all giving a history of some trivial injury, and for this reason are giving a brief synopsis, that we may thereby impress upon every one the importance of thorough investigation in *every case* of bone injury, with especial reference to a *previous* injury, be it even of trivial character, with the hope that an *early* diagnosis may be arrived at, upon which the nature of the treatment will depend and the prognosis based.

Sarcoma is a connective tissue growth always taking origin from connective tissue cells. It is a disease prevalent during early adult life, its most common cause being that of trauma, extending by way of the blood stream and continuity of tissue.

Many different forms are recognized. The one with which we are most frequently confronted is the giant cell variety. The other forms occurring are composed of one particular form of cells or a combination of types, such as the small and large round-cell combination, the small round spindle cell, or a combination of the spindle and round cells. The small round cell is regarded as the most malignant form of sarcoma, the giant cell form being the least malignant of all forms, and is considered by Bloodgood of Baltimore to be very benign in nature. He speaks of it as giant cell tumor, and not a cancer. On the contrary, Coley of New York, who has had a *vast* experience in dealing with this variety of diseases, contends that the giant cell form may at times prove to be one of the most fulminating forms of sarcoma.

DIAGNOSIS.

I do not think that making a diagnosis of the presence of sarcoma with a reasonable degree of certainty is such a difficult problem, provided one will make a thorough investigation into the patient's previous history, when a history of trauma to the affected part can be elicited.

Surgically speaking, there are two great forms recognized, the *central* or *medullary* and the *subperiosteal.* The central variety most frequently involves the shafts of the long bones beginning near the epiphyseal line. The growth is rather slow as compared with the subperiosteal form, causes uniform destruction of the medullary portion of the bone, leaving nothing but a shell of bone, which is filled with a dark brown, highly offensive material composed of organized blood clot in which can be found sarcomatous cells forming a network of bands. The subperiosteal form appears between the bone and its enveloping periosteum, grows very rapidly, frequent metastasis. I think that an *important* sign of diagnosis in the central form is the *abruptness* with which the diseased bone ends and the healthy bone begins, *slowness* of *growth, absence* of *pain,* or *very little pain,* little or no *fever,* no tendency to sinus formation except in advanced cases, enlargement of the blood vessels over the affected part, and the rapid loss of weight. The subperiosteal form is more irregular in contour of its enlargement; growth is more rapid. It is difficult to say where the diseased bone begins and the healthy bone ends. The only means whereby a differential diagnosis of the forms can be made is by use of the X-rays. Murphy of Chicago states that he relies more upon the diagnosis made by the röntgenologist than that of the pathologist. This, I am sure, is true, and do not doubt but that those who have had experience with the X-ray in the diagnosis of this disease will readily agree with Dr. Murphy in his statement.

CASE REPORTS.

The series of cases to report are six in number, all treated in Highsmith Hospital, Fayetteville, N. C.:

Case 1. *Male.* Age 38 years. Street car conductor. Was hit on left temporal region by weight of bell cord unconsciously but repeatedly over three years. Large spindle-cell sarcoma developed in the area. Within six months after the first appearance was size of a cocoanut. Patient could not wear hat and consented to operation when officials notified him that he must have tumor removed or give up position, from the deformity it caused.

Operation: Left external carotid artery ligated to control hemorrhage. Attempt at removal was made, but found to be too extensive. Wound closed and patient died 18 hours later from cerebral thrombus.

Case 2. *Woman.* Age 28 years. Three years previous to entering hospital had right upper last molar tooth extracted with great difficulty to dentist. Followed by much soreness and pain to patient. Six months previous to operation noticed a lump in upper jaw in region of extracted tooth. Gradually increased in size until it was the size of a large lemon when she entered the hospital.

Operation: Right superior maxillary bone removed. Microscopic examination showed large giant cell sarcoma. This operation was performed three years ago. Up to twelve months after operation had no signs of recurrence, Since then have lost sight of patient.

Case 3. *Male.* Age 19 years. Entered the hospital February 1, 1915, complaining of rheumatism in right shoulder. History of case developed fact that four months previous to entering hospital, while cranking automobile, crank was thrown backward by motor, causing severe jar to arm and shoulder with a twist of shoulder joint. Two months after time of accident noticed some loss of power of right arm. Immediately patient noticed anterior portion of head of humerus was enlarged. There soon appeared second enlargement on inner side of the head of the humerus, filling up axillary space. When he came to the hospital the entire upper one-third of humerus and head were considerably enlarged, very hard and slightly painful. Shoulder joint fixed.

X-ray diagnosis. Subperiosteal sarcoma. Removal of arm and shoulder girdle recommended. Patient, much surprised at diagnosis, went home, to return for operation, but did not return to Highsmith Hospital, but went to Johns Hopkins Hospital, Baltimore, where operation was performed. Report received was that growth was a mixed cell sarcoma involving head of the humerus, scapula, clavicle, and two upper ribs. Had a recurrence within two weeks after operation at site of incision. Wound never healed and patient died five weeks after operation from metastasis into chest wall, right lung and pleura.

Case 4. *Girl.* Age 11 years. Three years previous to admittance to the hospital right upper last molar tooth was extracted. Twelve months after removal had enlargement in this region. Was carried to nose and throat man, who removed her tonsils. Six months after this operation came to hospital with growth in the upper posterior part of jaw the size of a walnut. Right upper maxillary bone removed. Examination proved it to be a giant cell sarcoma. Three months after operation had a recurrence; second operation was performed. Four other operations were performed at intervals of about every three months, making a total of six operations within fifteen months. Last operation eight months ago. Had X-ray treatment from time to time since first operation, giving frequent exposures until therapeutic limit was reached, at intervals of every six weeks or two months. This patient has been constantly under observation and at the present time has no signs of recurrence.

Case 5. *Girl.* Age 15 years. Three years ago noticed enlarged condition of the gum of the right lower jaw. Consulted dentist, who extracted one of her lower molar teeth. Growth continued to enlarge until at the time of admittance to the hospital was size of closed fist. Operation was performed April 24, 1915. Right lower jaw removed from epiphyseal line to

and including ramus. Growth was that of a large giant cell sarcoma. Patient discharged May 26, 1915, in good condition. Wound healed nicely.

Case 6. *Female.* Age 40 years. Two years ago, while cutting wood, axe glanced, the back of it striking her on the inner side of right knee. Three months later joint became swollen, slightly painful, and patient gradually lost in weight. Knee continued to enlarge. Entered the hospital March 6, 1915, with the lower end of the femur very much enlarged and hard, with a peculiar leathery feeling. Swelling extended five inches above the knee joint, ending very abruptly. Skin white, vessels enlarged and tortuous. On asperation removed small quantity of sterile bloody fluid. X-ray examination showed absolute destruction of lower four inches of femur. Diagnosis of sarcoma was made.

Operation: Limb amputated at junction of upper middle and thirds. Wound healed nicely and patient went home two weeks after operation. Pathological diagnosis: Large giant-cell sarcoma.

From a synopsis of these cases it is made evident that the least trauma to a bony part is capable of producing sarcoma in the most fulminating form, and from the history of these cases one might conclude that even indirect trauma in the form of a twist, jerk, or jar is liable to produce sarcoma. Just how this change is produced no one has been able to prove. However, the consensus of opinion is that it is a result of the *reversion* of the adult connective tissue cell to that of the embryonic form, which undergoes rapid multiplication, with destruction of the adjacent tissues, the liability to metastasis depending somewhat upon the character of the cell present. Prognosis likewise depends upon early operation, character of the cell present, age, and general condition of the patient.

TREATMENT.

Owing to the great scope of the field opened by a discussion of sarcoma in all of its phases, I do not wish to enter into the treatment as minutely as I have its etiology and diagnosis. As is the case with all malignant conditions, there is but one treatment that offers any results, *i. e.,* surgical. Upon the variety of the sarcomatous cell present depends somewhat the surgical method employed. I do not feel that I can better present this subject to you than to quote some of its greatest exponents. Though working on the same subject and to the same end, their methods differ somewhat in detail.

Bloodgood of Baltimore says:

"It is a question whether the so-called giant-cell sarcoma should be included among sarcomas. I prefer the term 'giant-cell tumor.' Up to the present time I have been unable to find an authentic case in which this giant-cell tumor produced death by metastasis. The evidence so far demonstrates that ampu-

tation and, in many instances, resection in continuity, are unnecessary, or avoidable surgery. Curetting should be the operation of choice in the first instance. It should be performed under the Esmarch Bandage, the bone cavity disinfected with pure phenol (carbolic acid), followed by alcohol; if the resulting cavity is large, healing will be accelerated by filling the cavity with a piece of transplanted bone. After resection the wound should also be disinfected as after curetting; if possible, the defect should be filled by a piece of bone taken from the shaft of the bone involved by splitting longitudinally the remaining uninvolved bone. If this is not feasible, the tibia is the best bone from which to take the transplant. The diagnosis of a medullary giant-cell tumor cannot be made positively until the tumor is explored with the knife. The only hope for increasing the number of cures in the more malignant forms of sarcoma of the bone is in the early and systematic diagnostic employment of the X-rays."

On the other hand, Coley of New York contends that there are cases where metastasis occur and that at times "even the most radical treatment, amputation of the proximal joint, offers little or no chance of a cure."

In a recent article of John B. Murphy, he makes the following statement:

"In judging of the malignancy of a giant-cell sarcoma I rely more on the X-ray picture than on the microscopical examination; the disease in malignant cases is found to cross the epiphyseal line, while in the more benign forms it does not do so. I approve of resection rather than of curettement in these cases, following the resection by transplantation of another piece of bone for the maintenance of support."

After hearing the difference of opinion as expressed by the eminent authorities as quoted above, one can readily understand why there is no fixed and definite treatment to pursue in these cases. It depends entirely upon the individual surgeon's experience with these cases, the extension of the growth, and character of the cell present. I believe that in all forms of sarcoma early and thorough removal of the diseased tissue is indicated, and that amputation far beyond the diseased area is the safest and surest treatment to pursue.

THE CANCER PROBLEM.

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(Member Board of Directors of American Society for the Control of Cancer.)

The cancer problem may profitably be discussed under two heads: first, the strictly professional phase of the question; second, that larger phase of cancer which relates to the public. Under the first head let me say that to the profession cancer is not in any sense a new problem. It is as old as history. We were taught in our college days, as were our fathers, that cancer always begins as a local disease and becomes general only late in its history. We were also told that surgery applied early was the only sure remedy. We were further taught that lumps, moles, chronic fissures, etc., should be looked upon with suspicion; that they were either cancerous from the beginning or had a natural tendency to malignant degeneration. I mention these things simply to call your attention to the fact that the intelligent physician has all along been familiar with the most important phases of the cancer problem. The chief difficulty has been to get the public to understand the true significance of these things.

Hence this great movement for the education of the public in order that those afflicted with cancer may have the benefit of prompt and efficient treatment.

I said that intelligent physicians have understood the question all along. This is true; but we fell into the grievous error of assuming that what was so clearly understood by thinking members of the profession must be patent to every one. In this we find we are mistaken. There are still those in every community who believe, if we may judge by their actions, that cancer is cured by rubbing the local disease into the system. In this community, which justly boasts of a high order of intelligence, there are people who pay a quack to rub a handkerchief between his hands and lay it on their cancerous sores, believing in its healing powers. All over the country, from time immemorial, the people have been cursed by the so-called "cancer doctor," who has a remedy, always a secret formula, possessing such discriminating virtues that it will eat out the cancer and not harm the healthy tissues. Recently I visited a great city noted for its wealth, its learning, its philanthropies. In the midst of this famous center I attended a meeting in a temple costing millions of dollars. I never saw a better dressed, more intelligent-looking audience. They gave every evidence of culture and refinement. I never saw so

many limousines standing in front of one building. Now, one of the cardinal doctrines of this marvelous people is that cancer may be cured by the patient believing that he does not have cancer. [Laughter.] We smile at their credulity; but do we always manifest more wisdom than they do in the exercise of their absurd belief? Even those who are nearest to us sometimes surprise us by the ignorance they display upon questions of vital importance to their health. For instance, the daughter of a surgeon, who is reputed to be fairly well up in his profession, married. In due course of time she became a mother. During this trying period of her life her father exercised the most extreme care and solicitude, carefully supervising her diet, habits, secretions, etc. She passed through the trying ordeal quite as nicely as if she had taken the "Twilight Sleep." A few days later her father congratulated her on the ease with which she accomplished the supreme function of womanhood. In a burst of gratitude she said: "Yes; mamma had me to use $3 worth of Mother's Friend." [Laughter.]

Nor is this lack of knowledge confined to the laity. On one occasion a physician, who is a college-bred man from a distant city, a man who is deservedly of good repute, who has a large practice and is held in high esteem by his patrons and the profession, referred a patient with carcinoma of the breast to me. She spoke of her physician in the most enthusiastic and grateful terms. Among other things, she said: "My doctor has watched this lump in my breast for two and one-half years." I exclaimed: "Gracious! woman, your doctor ought to be a good Democrat." "Why?" she asked. "Because he believes in 'watchful waiting'!" [Laughter.] These are the reasons, ladies and gentlemen, why the profession has inaugurated this campaign to teach the people the truth touching cancer and to remind that portion of the profession, which unfortunately is yet quite large, who believe in watching these lumps grow until the cancer is unmistakable and the neighboring glands have become involved, that the aseptic scalpel used early in the game is the only sure cure for malignant growths.

The first one to undertake this educational work was a German surgeon, George Winter of Königsberg. He inaugurated the plan by writing articles for newspapers. He also wrote pamphlets especially for women, midwives, and physicians. Understand, please, that in countries like Germany the death rate is studied as carefully as is the science of war. The result of Winter's education was that the death rate from cancer fell from 139 per 100,000 population in 1907 to 118 in 1912. In the United States 75,000 people die of cancer in the registration area every year. The registration area of the United States, or that portion in

which births, deaths, causes of death, etc., are carefully registered, comprises only 70 per cent of the United States. Granting the same ratio in the unregistered areas, there are probably 100,000 deaths from cancer every year, or an average of one every six minutes. I have been speaking about twelve minutes, during which time two people have died of cancer. The American Society for the Control of Cancer has shown that at ages over 40 one person in every eleven dies of cancer. One woman in every eight and one man in every fourteen are attacked by cancer. Because of ignorance and neglect, cancer proves fatal in over 90 per cent of the cases. It is generally admitted that cancer is on the increase. Do you not think it is high time that the profession and the people as well arouse themselves touching this question? Cancer is no respecter of persons, race, creed, or social position. It is the common enemy to all mankind, attacking poor and rich alike. It is insidious in its onset and usually destroys life at its most useful period. One of the saddest things in my professional work is to have a woman, the mother of several children, brought to me with an inoperable cancer. Think of it! A large family of children made orphans and robbed of a mother's care, because of ignorance.

But are the people to be censured for this woeful lack of knowledge? You remember that when Philip was traveling across the desert he met a eunuch of high authority, who had charge of the treasures of Candace, Queen of Ethiopia. He was sitting in his chariot, reading the book of Esaias, the prophet. Philip, under the guidance of the Spirit, said to him: "Understandest thou what thou readest?" and the eunuch answered: "How can I, except some man guide me?" Then Philip got up in the chariot and set down by the eunuch and taught him the meaning of what he was reading.

I maintain that the responsibility of the cancer problem rests with the profession, and that it is our duty, as guardians of the public health, to educate the laity. When once the people see the truth as it is they will arise in the power of their knowledge—for knowledge is power—weed out cancer quacks of every description, and instinctively turn to the right source for relief.

We organized this symposium and have invited men of authority within the State and men of National reputation from other States to present the cancer problem to you plainly, squarely, fearlessly—to instruct the people.

The American Society for the Control of Cancer was organized two years ago "To disseminate knowledge concerning the symptoms, diagnosis, treatment, and prevention of cancer; to investigate the conditions

under which cancer is found, and to compile statistics in regard thereto." This society adopted as its motto, "In the early recognition and treatment of cancer lies the hope of cure." The American Society for the Control of Cancer has received the official approval of the American Medical Association, the American Surgical Association, the American Gynecological Society, the Clinical Congress of Surgeons, the American Congress of Physicians and Surgeons, the Southern Surgical and Gynecological Association, the Southern Medical Association, and indeed every large medical and health society of importance. It coöperates with the health organizations of cities, counties, and States. It organizes societies of physicians and business men, public-spirited citizens and women who are active in organizations for the upbuilding of every community, etc. "Agitate and educate" is the slogan.

On this occasion the American Society for the Control of Cancer has sent to us Dr. Frederic E. Sondern of New York City, one of the noted pathologists of America and a man who can speak with a high degree of authority. Also we are favored with the presence of Dr. J. M. Wainwright, chairman of the Committee on Health and Public Instruction, Scranton, Pa. I am sure that I voice the sentiment of this audience when I say that we feel honored to have these distinguished gentlemen with us, and we also feel that we will be greatly benefited by their words of wisdom. I will not speak longer, since one of the best evidences of a good surgeon is to know where to stop; besides, there are those to follow me who are greater than I.

WHAT EVERY PHYSICIAN SHOULD PREACH ABOUT CANCER.

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The problem of educating the public in regard to cancer depends not only upon knowledge which may reach the average layman through the channels of literary propaganda, but also upon information given out by the average physician on his daily rounds. If we are ever to conquer this dread malady we must instruct the people in the fundamental facts, and we must ourselves back up this instruction with intelligent and courageous action. It would never do for a layman who has been told the dangers of cancer to go to a physician and receive half-hearted advice

concerning a perfectly evident lesion. It is not simply knowledge which is required here, but moral courage of the highest order. Too often, I fear, we like to say the pleasing things, to point the easy way, when perhaps the burden might be forever lifted by jumping right into the issue upon our better judgment. We have not done our whole duty when we describe the ravages of cancer; we should set the sufferer in the right road and sound the warning note in season and out.

There are certain facts about cancer which are supposed to be understood by all physicians. It is generally accepted that about 75,000 deaths from the disease occur in this country every year; that its prevalence is apparently on the increase; that over 90 per cent of all cases are fatal; that the great obstacle to cure is the failure to get the cases early enough. Bearing upon these admitted statements are some important principles which it is the serious duty of every medical man, be he physician or surgeon, to preach wherever he goes. Let us name and discuss these principles.

1. The most important feature of all is the realization of the *precancerous period*. There was a time in every cancer when it was not a cancer. In the majority of instances cancer begins in the site of a previously benign lesion and always at a point of least resistance or lowered vitality. It is comparatively easy to observe this in an external growth; but the principle is as clear in growths of the internal organs, and results are even more disastrous when the principle is ignored. If the term "preventive surgery" can justly be applied to any ailment, surely it has a place in these precancerous lesions. Yet, how often do we see inaction on the part of the physician, who is waiting to make sure of malignancy before advising interference! Is it right for a doctor to watch a lump in a woman's breast for six months or more until it is undoubtedly a cancer? Such things are happening over and over again all around us. Sometimes I think text-books are the worst agencies we have. Not long ago there appeared in a book on surgery a full-page colored drawing of what was labeled "Cancer of the Breast." It represented a woman lying in bed; her face drawn and yellow, the breast completely filled with a large tumor mass, ulcerated and discharging; the axillary glands enormously enlarged and supraclavicular nodules apparent. That case was misbranded; it was no longer a cancer of the breast—it was a cancer of the whole body. What are we to expect if such misleading illustrations are passed around and such instruction widely countenanced?

Furthermore, there is unfortunately still harbored in the consciousness of a few physicians that old fetich, "If you cut it out, it will turn to a cancer." It is not surprising to hear it from the laity, but when it

comes from the profession itself hope seems long deferred. In times past, perhaps, there was some reason for the attitude, because many operations for the removal of malignant or even certain border-line growths were incomplete and resulted only in dissemination of the malignant cells, if they existed. But no enlightened practitioner in the present day can hold to the opinion that an operation will cause a growth to "turn to a cancer." The truth is more likely to be the reverse—if you *don't* cut it out, it will turn to a cancer.

Malignant growths are usually painless until the late stages. This is a point of serious moment, for the one factor which drives the average patient to seek relief is pain. If a growth is painful in its early existence, it is probably not a cancer; but the sufferer (and at times the doctor) will be more concerned about it than about the well advanced cancer which causes him no annoyance. The fact is, cancer as such has no distinct symptomatology. There are no specific signs of its presence or its progress. "When you can feel it you can recognize it, but there is not one symptom produced by cancer, either early or late, which may not be produced by some other disease. Therein we find our excuse for failure to recognize it early, and therein we find our difficulty in coping with it. The more you think of this statement, the more it will impress itself upon you, and the more anxious you will become to get nearer some early symptomatology."—(Park.) Depending upon its location in different organs or tissues, certain phenomena may be manifested, especially when the growth has fully developed. But here, as in many another condition, so-called cardinal symptoms are merely terminal events. It behooves us, therefore, to correct the false impression in regard to pain in cancer; to emphatically proclaim that cancer is symptomless until it is too late for any signs to avail; and that the only favorable period is either the precancerous period or the early stage of real malignancy, when it is to be diagnosed chiefly on suspicion.

2. Our second point, which is plain, but needs constant repetition, is that cancer always begins as a *local disease*. And it is the beginning we should fear, not the ending. The respectful fear, which brings action, is to be encouraged, not the final fear that leaves us helpless. Even after the full development of cancer, a part or the whole of the involved organ may be successfully removed. So much the better will these results be if the cancer can be discovered while it is yet localized. In growths of the skin and exposed mucous surfaces evidences of cancer are to be seen early, and the percentage of cures is high. Unfortunately, in the case of the uterus, stomach, and intestine the signs are not so promptly evident, and it is rare to find cases in which the cancer is still confined to

the part first affected. Since cancer spreads by the lymphatics, it is easy to note the immediate limits of the extending growth, but not easy to tell whether it has progressed beyond the first line of trenches. When this happens the disease is no longer a local affair.

It might well be a question as to what constitutes an early case. The reliable guide is the matter of localization. Invasion of a removable organ, or even of its surrounding glands which can be totally extirpated; restriction of the growth to a particular tissue; involvement of certain areas which can be readily effaced by treatment—all these are indications of an early case. Prompt recognition of such conditions is the task before us.

Delay is the deadly sin; and the chief offending may be laid at the door of the doctor in many cases. It is impossible for us to overlook the fact that sometimes we know and fail to act, while at other times we would act if we only knew. The patient cannot escape his own responsibility, provided he is informed. What we should most earnestly imbue him with is the desire to follow up early recognition with prompt treatment; to inspire hope when there is room for hope, and not to present false aspirations in the helpless stage. When a woman with a far-gone uterine cancer is told that she must submit to a hysterectomy, or another with cancer of the breast is so weak and emaciated as to be brought in on an ambulance, something is undoubtedly wrong with our mental or moral perceptions.

3. It is our bounden duty to urge *early and frequent examinations* of all patients who may be suspected of developing cancer or who are approaching periods of life when they are most likely to be victims of the disease. In no other way can we so surely forestall its onset. This is especially true of cancer of the uterus. Thousands of women are losing their lives every year simply because they will not submit to examination or because their physicians have not insisted on examination as the only safeguard against malignant disease and the only rational basis for successful treatment. The proper position to assume is the refusal to prescribe, suggest, or advise in any case of pelvic disorder without a careful examination. Untold mistakes might have been prevented by following this course; lives and reputations might have been saved.

The "change of life" bogey is still with us. If a woman is told by a physician that "it is the change working on her," she is perfectly satisfied, when it may be that serious pathological processes are rapidly undermining her life. Most often it is cancer. Cessation of the menses for several months, followed by an unexpected return, is the common danger signal. How any physician can sit still and wait in the presence of such

a warning is more than the imagination can conceive. It cannot be for lack of knowledge; it is hardly due to a failure to suspect the trouble. Very likely carelessness and a shrinking from meeting the issue have much to do with the attitude. Let us all resolve here and now that never will we let an opportunity go by to declare the danger of these situations and to impress patients with the necessity of being examined before even they think it is demanded. Many uterine cancers get a good start before the time for the menopause, so that as a general rule every woman at or near the age of thirty-five ought to be examined by her physician regularly every three to six months up to the age of forty or thereafter. By such a plan numbers of cancers would be discovered soon enough to promise a cure.

The gospel of examination is the gospel for us to preach. There may be amongst us men who are wise enough to tell what is the matter with patients by simply looking at them; but the majority of us, I am sure, do not possess this power. And those of us who have had the greatest experience must admit that sometimes even after the most searching investigations we are not warranted in giving positive opinions. How necessary it is, then, that we should bring to our aid any means of arriving at conclusions. Examination is the thing.

4. *"In the early treatment of cancer lies the hope of cure."* This is the slogan of the American Society for the Control of Cancer, and it expresses, as a corollary, the end and aim of our discussion. Prompt recognition, early treatment, hopeful cure—these stand in direct relation. Methods of treatment will depend very much upon the stage, the location, and the kind of cancer. In the early cases the agent which will most safely and completely remove the growth should be employed. This is usually best done by a surgical operation, which has the additional advantage of also including attention to any involved glands. It is true that the cautery, the X-ray, and radium seem to be successful in some instances of external cancer, and may be used with judicious caution. Their results, however, cannot be said to equal those from excision where it is indicated. The actual cautery, point or blade, can be used for cutting instead of an ordinary scalpel, the heat giving it added effect. About the only difference between X-ray and radium is a matter of time. Radium is very rapid in its action and accomplishes in hours what it takes the X-ray days or weeks to do. Undoubtedly they both have their uses in the therapy of cancer. The X-ray will get rid of external growths without deformity if applied over a long period, but has little, if any, penetrating effect.

The status of radium may be summed up as follows: "According to the most authoritative opinion, the curative effects of radium are practi-

cally limited today to superficial cancers of the skin, and to superficial growths of mucous membranes and certain deeper-lying tumors of bone, etc., which are not very malignant. Radium has probably been shown to exert a definitely curative effect on certain of these cases while the disease is still local and in the early stages. Radium definitely relieves suffering when used in the advanced stages of deeper-seated cancers; but in those cases it improves only the visible or tangible manifestations and exerts no effect upon the disseminated disease as a whole. It is believed that there is as yet no proof that radium has finally cured any case of advanced and disseminated cancer. The best results of radium therapy can be secured only when comparatively large amounts are available for use, and the present limited world's supply of this metal places it out of reach of the great majority of patients."*

In the late stages any remedy which relieves pain and promotes comfort is the one to be chosen. Palliative measures, however, occasionally check the course of cancer and arrest it for long periods, if not entirely. High degrees of heat appear to act favorably in many cases of uterine cancer, too far gone for radical operation. Of course, we should strive to get them before they are too far gone, and not be compelled to speculate upon uncertain, last-resort measures. Above all, promises of recovery must never be held out to patients who are actually incurable. To inspire them with thoughts of cure or to suggest ideas of radical surgery to them is the height of ignorance and charlatanism. As soon as they are finally enlightened, every lingering vestige of their faith is dashed to the ground.

But there is splendid opportunity for hope. If left to itself, the mortality rate of cancer is 100 per cent; under early operation most of them will get well. Every hour of delay diminishes the rate of cures and increases the number of hopeless cases. What is the lesson? Early recognition, early treatment, early recovery. Let us cry hope while there *is* hope.

CONCERNING THE EARLY DIAGNOSIS OF CANCER.

Frederic E. Sondern, M.D.

The pathologist also has frequent evidence that a malignant tumor reaches an inoperable stage before a diagnosis of its nature is made. This unfortunate oversight is generally due to one or more causes, such

*Leaflet of Amer. Society for the Control of Cancer.

as the delay on the part of the patient suffering from malignant disease in seeking medical advice; the tardy diagnosis of malignant disease by the clinician, and possibly a reluctance to have surgical counsel in suspicious cases; and the error of the surgeon in mistaking a malignant for a benign condition. The educational campaign instituted by the American Society for the Control of Cancer is intended to improve these conditions, and its aims deserve the earnest support, not only of the profession at large, but also of the influential layman.

While there is no doubt in the minds of most clinicians concerning the proper treatment of operable carcinoma, and even if methods other than surgical should at some time be found justified, there is certainly nothing more imperative than the *early diagnosis* of cancer, if we hope to reduce its mortality. Not only is the education of the general public necessary to bring this about, but it is even more important that the clinician should keep absolutely abreast with every diagnostic aid. The physician's responsibility toward his patient in the so-called precancerous stage is tremendous, and this will be recognized and appreciated to a greater degree as the education of the public proceeds. It is particularly with reference to the pathologist and his work in this connection that I take the liberty of addressing you.

Until relatively recently it was customary, in a communication of this kind, to emphasize, first and last, the imperative duty of the clinician to excise a portion of practically every suspicious growth for histologic study, for the purpose of justifying a radical operation if found malignant, and for preventing unnecessary mutilation if found benign. Further experience, statistics, and research have demonstrated that this diagnostic procedure must be modified; that it occasionally is misleading, and under some circumstances positively dangerous. It is our duty to call the attention of the profession to the fact that cutting through healthy tissue into a malignant growth is not devoid of danger. A committee of the society previously mentioned has formulated a conservative opinion which should be given wide publicity, and is as follows: There are two important questions concerned when it is proposed to remove a portion of a suspected malignant tumor for diagnosis; first, the advantage gained by microscopic examination, which usually furnishes a positive diagnosis of the nature of the disease, and, second, the danger of aggravating the disease by this removal. It is universally agreed by surgeons and pathologists that in a large group of cases the former advantage decisively outweighs the latter danger. It is, therefore, a universal practice to support the clinical by a microscopic diagnosis in cases of reasonable doubt. In the opinion of some of the best authorities,

this practice has justified itself. In fact, since the gross diagnosis of malignancy in tumors is difficult and sometimes impossible, it seems proper to facilitate as far as possible the means of securing accurate microscopic diagnosis. The necessity of making such diagnosis will be determined by the skill of the clinician. Some are more experienced in the field than others. In general, the procedure becomes desirable when the clinician is in doubt and a decision urgent. Some capable authorities would go much further, and maintain that it is of importance to the patient that the exact type of the tumor should be determined before the operation. Against these considerations stands the danger of aggravating the disease by the trauma. The extent of this danger will depend on the nature and the position of the tumor, and must be judged in each instance from all the factors in the case. To cut through the skin into a malignant tumor of the breast and remove a piece for examination is generally discountenanced. The whole tumor should be removed, or the whole breast, and the whole mass subjected to examination. Not a few errors in diagnosis result from the excision of inflamed tissue on the edge of the tumor, the malignant area being missed. These errors occur in the breast, prostate, and with comparatively inaccessible growths in various regions. Unless a tumor can be accurately located, it is better not to cut into it for diagnosis. In general it may be said that incisions into actively growing, deep-seated, malignant tumors should, if possible, be avoided. Such a trauma may disseminate tumor cells through the vessels, or permit unnecessary extension to the skin or surrounding tissues, or accelerate growth by relief of capsular tension. On the other hand, there is little danger from the excision by a clean cut of a sharp knife of a suitable portion of any superficial growth of skin or mucous membrane. Under all circumstances it is highly important to avoid rough handling, kneading or crushing the tissues. The wisdom of such an examination may often depend on the possibility of obtaining a reliable opinion from the microscopist, in the absence of which it is better to rely on clinical judgment.

In support of what has been said it is only necessary to quote the figures published by Bloodgood two years ago in his paper on *Border-line Pathological Lesions,* read before the American Surgical Association. He states, for example, that in some groups of malignant tumors as high as 50% of the cases are inoperable when they reach the surgeon. He is particularly emphatic on the danger of incomplete removal of a malignant growth of the breast, even if this is followed by a radical operation days or weeks after the microscopic examination of the tumor has been made. The same, I believe, applies to malignant disease of the prostate

and bladder. Bloodgood states that in breast tumors clinically benign, if the radical operation immediately follows the exploratory incision which has revealed malignancy, the probability of cure is 80%, while if the tumor alone is removed, and this is followed by a radical operation at a later time, the probability of cure is less than 10%. This is certainly an alarming statement and places an immense responsibility on the operating surgeon, tempered somewhat by the support of a frozen section made at the time of the operation by a competent tissue worker.

It is evident that the modern conception of dealing with malignant disease demands a more intimate knowledge of the gross appearance of tumors by the surgeon and the immediate radical removal of those which appear suspicious. Even so, the probable error is at least 10% and in some groups of tumors considerably higher. This percentage of error can be materially reduced by the examination of frozen sections during the operation without jeopardy to the patient. This additional safeguard will prevent unnecessary mutilation in some instances and will obviate dangers attending the operation in two steps in others, but it will unfortunately not completely eliminate error, as shown by the following experience: Parker Syms reported a case before the New York State Medical Society last month in which a quiescent fibroadenoma of the breast had existed for quite a number of years. Owing to the development of an adjoining mass, a radical operation was done at once. On subsequent examination of the specimen the original tumor was found to be of a perfectly benign nature, but the one adjoining it was a small, typical, rapidly growing carcinoma. It was the surgeon's clinical experience which led to the proper course, for the gross examination of the main tumor mass would have given a clear picture of a benign growth, and this would have been confirmed by a frozen section.

Experience teaches how necessary it is to continually remind the clinician of the importance of obtaining a proper piece of tissue when an excision for diagnosis is made, and of the imperative need for immediate fixation of this tissue in a proper preservative, if a conclusive opinion is to result from the examination.

Although the diagnosis of syphilis has been greatly benefited by modern serology, it is surprising how frequently extensive operations are undertaken for the unnecessary removal of syphilitic tissue. The exclusion of syphilis as a possible etiological factor cannot be too strongly urged.

Recent years have seen the development of various laboratory procedures in serology for the diagnosis of malignant disease, and it is hoped that final perfection will lead to much benefit in the early diagnosis of

cancer. As matters stand at the present time, the eminently practical value of these methods is doubtful, and the clinician is not justified in supporting his opinion with these procedures, which have as yet none but theoretical merit.

In conclusion, allow me also to call your attention to the alarming increase of cancer during recent years. Doubtless the improved method of diagnosis, the more accurately determined causes of death, and the more carefully compiled vital statistics explain this increase to a certain extent, but by no means completely. On the basis of official data, Frederick Hoffman of the Prudential Life Insurance Company has published an estimate of the annual mortality of cancer in the United States as 75,000 and in the civilized world as 500,000. The cancer death rate in the United States is increasing 2½% per annum. The average age of death of cancer is fifty-nine years, of which over 90% are deaths at over forty years of age. The cancer death rate in persons over twenty-five years has increased over 25% in the last decade. The cancer death rate of large American cities has increased from 37.2 per hundred thousand of population during the five years ending with 1876 to 80.5 during the five years ending with 1911. The distribution was about as follows in 1913: Stomach and liver, 30,000; female generative organs, 11,000; rectum and intestines, 10,000; breast, 7,000; skin, 3,000; other organs and parts, 12,000.

An analysis of this distribution clearly indicates the predominance of cancer in positions where its diagnosis is difficult. The surgeon's plea that he will cure cancer of the stomach if the general practitioner will make an early diagnosis is usually answered by the statement that the practitioner cannot yet advise an exploratory laparotomy in every case of indigestion in persons over forty years of age. At the same time the clinician must improve his diagnostic ability if we are to reduce cancer mortality, and the education of the general public in cancer control will force him to earliest possible diagnosis, as it has in a measure done in tuberculosis.

In no other research problem at the present day have we the endowment or the force of brilliant scientific men as in cancer research, and it is to be hoped that this vast work will sooner or later result in a great relief to mankind. In the meantime, it is the imperative duty of each and every one of us to do all in our power to reduce cancer mortality, which now threatens to exceed tuberculosis mortality. For the present we can only do this by the education of the public in suspicious signs and particularly in the education of the physician in the early diagnosis of the disease.

Dr. J. M. Templeton, Cary: As usual on such occasions, these papers have all discussed this subject from a surgical standpoint. Now, my friend, Dr. Long, said that the only remedy is the knife, and the first thing is to make a correct diagnosis early and then use the scalpel. I believe that possibly he is correct, and that the time will come when that will be the treatment for cancer; but today they tell us that 75,000 men and women are dying with cancer annually, and we know that a very large proportion of the profession cannot make an early diagnosis of cancer. In the second place, if the physician makes a correct diagnosis and makes it early, and tells the patient that the cure is the knife, he will go to Kellam and get cured without it.

Now, if the knife is the only cure, what will we do when people run from the knife? I am as well satisfied that there are other cures for cancer as Dr. Long is that there are not. What shall we do with a laity educated to avoid the knife, and with a profession not able to make an early diagnosis? Instead of the colleges all teaching that the only cure is the knife, giving other means a secondary place, they should teach the scientific use of paste, radium, etc., so that we might by these means, even if they are not the best, cure cases that refuse the knife.

ANATOMY.

SOME PRACTICAL OBSERVATIONS UPON THE PROSTATIC PORTION OF THE MALE URETHRA.

C. O. Abernethy, B.S., M.D., Urologist and Dermatologist to Rex Hospital and St. Agnes Hospital, Raleigh, N. C.

In the study of the anatomy of the prostatic urethra one is impressed with the poor description found in the various text-books. That usually given is the prostatic urethra is ¾ to 1¼ inches in length, and extends from the internal urethral orifice to the superior layer of the triangular ligament, and is surrounded by the prostate gland. The verumontanum is a longitudinal narrow fold or ridge, fusiform in shape, which begins at the uvula on the vesicle trigone and extends to the membranous portion of the urethra, being composed of mucous membrane and subjacent structure of the prostate. On either side of the verumontanum is a longitudinal furrow called the prostatic sinus, into which open the prostatic ducts. In the front part of the verumontanum, just anterior to its highest portion, is a blind pouch, the sinus poculairs, from ⅛ to ½ inch in length, which leads upwards and backwards into the substance of the prostate, and is the homologue of the uterus and vagina in the female. On the lateral margins of the sinus pocularis are the slit-like openings of the ejaculatory ducts.

The verumontanum and the sinus pocularis have been excellently described by Rytina, of Baltimore, as follows:

The verumontanum shows a pale pink color, lighter in hue than surrounding mucous membrane; is rounded or oval in shape, excepting the base, which is more flat; is composed of two distinct structures, an inner or central, and an outer or peripheral portion. The inner portion comprises about one-quarter to one-third the whole, has a yellowish color, and a loose, spongy, lobulated character. In the center of the base is a small opening through which, if a probe is passed, it will come out above at the sinus pocularis. The outer or peripheral portion comprises about two-thirds of the whole, is grayish pink in color, its texture fine, close, and more or less homogeneous.

Rytina further shows by the microscope that the verumontanum contains many glands and acini, surrounded by bands of fibrous and elastic tissue; is richly supplied with blood vessels and lymphatics, but poor in

nerve supply. There are a few involuntary muscle fibers present. He also shows that the sinus pocularis is a long canal lined by a many-layered squamous epithelium, ending by a complicated system of invaginated processes.

In the six specimens that it has been my privilege recently to study with the naked eye the ejaculatory ducts opened upon the outer sides of the verumontanum, some of them near the apex, and others close down near the base.

The anatomy of the prostatic urethra explains to a great extent why the prostate, ejaculatory ducts, and seminal vesicles are so often involved in inflammations of the posterior urethra, and accounts in a large measure for the chronicity, resistance to treatment, and prolonged infectiousness of affections of this portion of the urethra.

The symptoms of disorders of the verumontanum are urinary, sexual, and referred. It is not my intention to go fully into these symptoms, as that would take too much time, but to review briefly some of the more salient features.

Frequency of urination is probably the most annoying urinary symptom. This may or may not be accompanied by pain and dribbling.

The sexual disorders are usually precocious, imperfect, or painful ejaculations; diminution of sexual desire; imperfect erections; nocturnal emissions; etc. In other words, the picture that has been called sexual neurasthenia.

The referred symptoms may be pain anywhere below the navel, but the most frequent are pains in supra-pubic region, the hips and lumbar region.

In gonorrheal infection the verumontanum seen through the endoscope looks enlarged; the surface rough, granular, and congested; orifice of sinus pocularis hard to find; sinus pocularis is deep and often filled with fluid.

Some of the conditions which cause the verumontanum to resemble a gonorrheal infection are: sexual excitement; coitus interruptus; and masturbation.

The treatment of these various conditions generally resolves itself into treating the verumontanum. Irrigations, deep instillations, and massage of the prostate are very important; but the direct application of remedies through the endoscope has given the most satisfactory results.

Randall, of Philadelphia, reports good results in the treatment of nocturnal pollutions by applying silver nitrate in 10, 20, and 50% solution to the verumontanum through the endoscope.

Rytina recommends radical removal of the verumontanum in infectious cases.

The injection of the sinus pocularis with a solution of silver nitrate from a 2 to a 10% strength has given excellent results in the chronic infections of the verumontanum. In making these applications one should be very careful to wipe away all the excess of the drug.

Applications through the endoscope are being extensively used at the present time in treating the prostatic portion of the urethra and the chronicity of the infections of this portion of the genital track is being greatly lessened thereby.

Dr. M. H. Fletcher, Asheville: I would like to call to mind a patient I have had. He contracted specific urethritis during the Civil War and he continued to have it until he died. It was the difficulty of access to this part of the anatomy that prevented me from doing very much for him. He raised a large family. Every six months or every year he would have this discharge. There was no gonococci, but the trouble stayed there.

It is that particular sort of failure that keeps me from treating those diseases any more. Somebody must develop more skill than the average doctor. I asked a physician of a school in our city what he got out of the treatment of gonorrhea. He said: "Well, I don't get anything but humiliation and disgrace." It does seem that somebody ought to be able to cure these cases. It is a reflection on the medical profession that the ordinary physician can't cure an ordinary case of gonococci.

Dr. Watt Cole, Greensboro: There are doubtless cases of this nature that are mistaken for prostatic neuroses. Many of the recurrent attacks of gonorrhea are not new infections, but are the results of an old infection of the verumontanum or utricle. The utricle may contain a mixed infection, and in this case it offers an excellent field for testing the efficiency of the combined gonorrheal vaccines, as the utricle is easily accessible to inspection. If a patient with an infection of the verumontanum and utricle leads a temperate life, the swelling and inflammation may subside to a great extent. All traces of urethral discharge may be absent, and as far as the patient is concerned he thinks himself well, but if he dissipates sexually to any great extent it will cause an acute exacerbation of the old infection. In this case one would find the verumontanum swollen and evidences of acute inflammation in the surrounding mucous membrane; also, there may be a return of the urethral discharge.

I believe that this class of cases is responsible for the infection of many innocent women, and, if they are recognized and given the proper treatment, it will doubtless influence the number of gynecological operations.

Dr. C. O. Abernethy, Raleigh (closing discussion): In Dr. Fletcher's case I suspect the man had a chronic prostatitis. You don't want to lose sight of the fact that there are a great many discharges from the urethra that are not gonorrhea. The very fact that this man raised a large family would argue very strongly, in my mind, against his having had gonorrhea. He had a prostate filled with pus cells which were non-infectious. If he had had an active gonorrhea he wouldn't have raised that large family of children. In my opinion, there are very few women who have gonorrhea and don't get infection of the tubes from it. It's a pretty common condition for the tubes to become infected, and of course when they do, that practically makes the women sterile for the rest of their lives.

I read this paper to bring out the fact that the verumontanum has not been given enough attention in the studies of anatomy. When you get down into the sinus pocularis, it is a convoluted tube. Some of them are at least ½ inch deep. Others are probably 1/16 of an inch deep, and they range from ½ to 1/16. Treatment is done through an endoscope, and when you find the sinus pocularis it is injected with a 2 per cent nitrate of silver solution. Follow this with an application of a 10 to 20 per cent solution to the verumontanum. The only danger is leaving an excess of this strong solution in the deep urethra. If it trickles down into the bladder or gets in the other portion of the urethra you will probably get a stricture. All you have to do is to take a probe with dry cotton and wipe it off. It has given excellent results. This method is being extensively used, and, in my opinion, is going to be one of the great aids in curing these chronic discharges of the urethra.

The absence of gonococci in the discharge doesn't mean the man is not infectious. The way to find out is to massage his prostate, examine it under the microscope. If he has pus cells present, that man is probably an infectious proposition, and he will infect the woman he marries. You must massage that prostate until the pus cells are very few and until the lecithin crystals predominate.

If he has over ten or twelve pus cells in one field of an ordinary high-power microscope, consider it an infectious case, and don't turn him loose until you get it lower than that.

THE SURGICAL ANATOMY OF THE THYROID GLAND.

J. E. Ray, Jr., M.D., Raleigh, N. C.

The subject of the anatomy of the thyroid gland has grown to be one of vast importance, since in recent years the treatment of the pathological changes, both structural and functional, in this gland have been gradually shifted from the field of medicine to that of surgery; and if not completely shifted, it has been recognized that the treatment of these conditions belongs to the field of surgery, as well as that of medicine. Indeed, it is generally conceded now that the real success in the treatment of these obscure conditions lies in the judicious use of both surgery and medicine.

The purpose of this paper is to outline briefly the development of the thyroid, its anatomy, and to give a short résumé of the chief surgical procedures, with the anatomy of these steps. I shall not attempt to go into the discussion of the various problems presented by the practically unknown physiology and pathology of these conditions, nor into the indications for or against any method of treatment, being content to briefly outline the more common procedures, leaving these other subjects to the fields in which they rightfully belong.

EMBRYOLOGY.

The thyroid gland makes its first appearance during the fourth week of intrauterine life, as an evagination from the entodermic layer of the walls of the primitive pharynx. There are three points in this wall: one ventral from the second visceral cleft, two lateral from the fourth visceral cleft, which are the points of origin of this organ, though the relative importance of these three as regards the amount of tissue furnished is still a debated question. His claims that the median point furnishes the isthmus and most of the lateral lobes; Verdune claims that the median point furnishes all of the gland and that the lateral buds atrophy.

The median portion arises from the ventral wall of the pharynx in the median line between the first and second visceral arches. This pouches out on either side, assuming the form of an epithelial vesicle, connected by the constricted pedicle of the diverticulum with the ventral wall of the pharynx. The orifice of this pedicle corresponds to the point of junction of the three parts of the tongue and forms the foramen cæcum, the remains of which are seen at the apex of the V-shaped row

of circumvallate papillæ of the tongue. As the embryo develops, the primitive gland tissue becomes more bilobed and the duct larger, and upon the embyros attaining the length of 8 mm. the tube becomes closed atrophies. This is seen in the adult as the canal of His. Upon attaining the length of 14 mm. the enlarged distal end brakes up into an anastamosing trabeculæ. At the length of 18 mm. the lateral buds separate from the points of origin and fuse with the median portion.

The lateral buds arise from either side of the pharynx from the fourth visceral clefts, and separating from the points of origin, give out small buds and gradually approach the median line, fusing with its posterior surface. These three parts unite in the seventh week, and after the fusion consist of a network of cords of cells, the meshes of which reticulum are occupied by embryonal connective tissue. Subsequently the cords of cells become hollowed out, and exhibit alternating enlargements and constrictions. By the increase of constrictions the continuity of the cell cords is interrupted at short intervals, and so the network is converted into numerous closed follicles lined with epithelium, the formation of the follicles beginning in the eighth week. The follicles later undergo considerable increase in size on account of secretion by their epithelial cells of a peculiar colloid material characteristic of the thyroid body. The embryonal connective tissue, made up necessarily of mesodermic elements, furnishes the connective tissue framework and blood vessels of the organ, while the epithelium evaginates in the manner indicated from the entoderm of the gut tract.

GROSS ANATOMY.

The thyroid gland consists of two roughly pyramidal shaped lobes lying on either side of mid-line of the neck, extending from the sixth tracheal ring to the middle of the thyroid cartilage, connected by an isthmus of varying size, which joins the lobes nearer the lower than the upper poles. The isthmus lies upon the second, third, and fourth rings, and is connected with it. It is bluish red in color, rather firm in consistency, and weighs normally from 40 to 60 gms., being larger in female than in the male. It is convex and rounded on its outer surface, but on the posterior surface conforms roughly to the shape of the underlying structures. The lobes are triangular in shape, with base downward, measuring about 5 cm. at base; 1.8 cm. at apex and about 2½ cm. thick in the middle portion. The isthmus varies from 6 to 18 mm. in breadth and is of varying thickness.

It is completely surrounded by a thin connective tissue capsule, the anatomical capsule, from which septa and trabeculæ pass into the gland,

dividing it into lobules. The gland substance consists of variously shaped, nonconnecting follicles, varying in size and separated by a vascular connective tissue continuous with the tissues surrounding the lobules and with that of the capsule. The follicles are lined with a single layer of epithelium, in which two sets of cells are distinguished, chief and colloid cells, and are filled with colloid substance, the secretion of the gland. The septa are filled with a rich capillary network of both blood and lymph vessels.

Outside this anatomic capsule is the surgical capsule, or, as called by Kocher, the external thyroid capsule. It is a thin layer of the deep cervical fascia, formed as follows: The layer of cervical fascia that splits to inclose the sterno mastoid muscle gives off from its deep surface one or more fascial bands that inclose the great vessels and form their sheath. From the mesial side of this vessel sheath several processes arise; one passes anteriorly in front of the thyroid and joins a similar layer from the opposite side, forming a part of the pretracheal fascia. This layer extends upward from the isthmus and adjacent portion of the thyroid to the cricoid and lower borders of the thyroid cartilages, forming a distinct band, the anterior thyroid ligament. Another process passes from the vessel sheath posterior to the thyroid and splits into two layers, the posterior passing behind the œsophagus to form the prevertebral fascia, the anterior one passing along the posterior surface of the gland and is inserted into the posterior part of the external surface of the trachea. It is between this layer and the posterior portion of the anatomic capsule that the parathyroid glands lie. As a result of the fixation of this sheath anteriorly to the trachea, the gland moves with the trachea in swallowing. In the external capsule are numerous veins, venæaccessoriæ of Kocher. The recurrent laryngeal nerve lying in the groove between œsophagus and trachea is imbedded in the posterior sheath of the external capsule.

RELATIONS.

The apex of the gland lies between the sterno thyroid muscle and the inferior constrictor of the pharynx, the latter separating it from the hinder portion of the ala of the thyroid cartilage and its inferior cornu. Anterior to the gland on each side lie the sterno thyroid muscles, in front of which are the sterno hyoid, and running diagonally across the upper part of the sterno thyroid is the anterior belly of the omohyoid. The sternal end of the sterno mastoid muscle covers the lower end of these muscles and also a part of the lateral lobes of the gland. The anterior jugular veins pass down on either side to the mid-line between the super-

ficial layer of the deep fascia and the depressor muscles. Posteriorly and internally the gland lies in relation to the trachea, larynx, œsophagus, and superior thyroid arteries above; and the recurrent laryngeal nerve, longus colli muscle, the inferior thyroid arteries and parathyroid bodies below. External to the lateral lobes is the carotid sheath with the artery, vein, and vagus nerve. When the thyroid gland enlarges its relationship to neighboring structures changes. If enlarged forward or upward, the goiter stretches and separates the muscles overlying it. If lateral, the carotid sheath and its contents are displaced. In a large goiter the artery may be pushed out and behind the vein, while the vein becomes spread out upon the side of the tumor; or may even lie on its anterior surface. In extreme cases the artery and vein may be separated by considerable distance, the vein lying in front and nearer the midline than the artery. Hence, the position of the artery does not always indicate the position of the vein. This is probably due to the fact that the veins that pass from the gland to the internal jugular vein limit its displacement, while the artery is not so restricted. The recurrent laryngeal nerve may be pushed back further between the trachea and œsophagus.

BLOOD SUPPLY.

The arteries supplying the thyroid gland are two superior, two inferior, and occasionally the thyroideaima.

The superior thyroid artery arises from the front of the external carotid a little above the origin of that vessel, and coursing forward, inward, and then downward in a tortuous manner goes to the depressor muscles of the hyoid, the larynx, the thyroid body, and the lower part of pharynx. At first it runs upward and forward just beneath the great cornu of the hyoid. In this part it lies in the superior carotid triangle and is quite superficial, being covered only by the skin, superficial fascia, and platysma. It then turns downward and passes beneath the omohyoid, sternohyoid, and sternothyroid muscles, and ends in the upper part of the thyroid body by breaking up into branches; some pass in front and others behind the lateral lobes to anastamose with ascending branches of the inferior thyroid; others go to the isthmus and anastamose with vessels from the opposite side.

The inferior thyroid artery is the largest branch of the thyroid axis, which arises from the first portion of the subclavan artery. It may arise as a common branch with the suprascapular or be a single branch of the subclavan itself. It ascends tortuously upward and inward in front of the vertebral artery, inferior laryngeal nerve, and longus colli muscle; and behind the common carotid artery and sympathetic nerve and inter-

nal to the scalinus anticus muscle to the back of the thyroid body, where it breaks up into branches which anastomose with the superior thyroid and those of the opposite side, also sending branches to the parathyroid bodies, which lie in close relation to the ascending branches on the posterior surface of the gland.

Veins are of three sets: superior, middle, and inferior.

Superior.—There are one or two on each side which leave the upper pole of the thyroid where the arteries enter and ascend to join the internal jugular or common facial veins passing behind and beneath the artery.

Middle.—These usually leave the lateral lobes at about their center, cross the common carotid in front, and enter the internal jugular vein. They are not constant, and may be represented by several veins.

Inferior.—These are the largest vessels of the return flow of circulation; are formed by branches from the isthmus and lower part of the lateral lobes. Their course is variable, but in general descends along the trachea on either side to the innominate veins. At times they may form a plexus in front of the trachea below the isthmus.

NERVE SUPPLY.

The nerves of the thyroid accompany and surround the blood vessels. They are derived from the superior ganglion of the sympathetic and from the superior and inferior laryngeal branches of the vagus. No secretory fibers have been demonstrated.

SURGICAL CONDITIONS.

The conditions of the thyroid which a surgeon is called upon to treat are roughly divided into two classes:

1. Those in which the pathological changes do not have to do with the secretory functions of the gland, but of the gross changes.

2. Those due to morbid conditions of the secretory function.

Under the first head come (1) simple goiter, (2) cystic goiter, (3) malignant changes, (4) acute and chronic infections.

Under the second head come (1) hyperthyroidism, (2) exophthalmic goiter.

As we divide the surgical conditions into two classes, so we may divide the surgical procedure into two classes:

1. For the gross morbid conditions:

(*a*) Excision, which is the removal of one lobe or one lobe and isthmus.

(*b*) Resection, which is the removal of part of one lobe or parts of both lobes.

(*c*) Enucleation, which is separation of a cyst or discreet nodule from healthy thyroid tissues.

(*d*) Exteneration, which is the incision and evacuation of a cyst or nodule.

2. For the functional conditions: The first two of the above have been and are now being used; but the far better treatment of these is by ligation of the superior and inferior thyroid vessels, either doubly or singly, at one or more sittings; except in cases where one-half of the gland is palpably at fault. Then hemithyroidectomy should be used.

PROCEDURES.

1. Simple cases:

Before one begins these operations he must always bear in mind the relation to certain structures that it is imperative not to injure. That is, he must know what not to do as well as what to do. These points are:

(*a*) Do not injure the recurrent laryngeal nerve. This is found between the trachea and œsophagus posterior and mesially to the gland capsule.

(*b*) Do not remove the parathyroids. These lie between the two capsules of the gland posteriorly in close relation to the inferior thyroid arteries.

(*c*) Preserve enough tissue to prevent the occurrence of myxœdema.

(*d*) Also important is sufficient exposure of the operative field so that all steps may be in sight.

Incisions.—The usual incisions in these operations are:

1. Collar or transverse.

2. U-shaped.

3. Oblique; along the outer margin of the sternomastoid. And various modifications of these three.

Excision.—The transverse or collar incision is curved with slight concavity upward, extends from one external jugular vein to the other, with its lowest point about 3 cm. above the sternum. The skin and platysma are cut together and dissected up and down. Next the cervical fascia containing the anterior jugular vein is cut in the same way, the vessels being ligated previously. This exposes the depressor muscles and the sternal attachments of the sternomastoid muscle. The sternohyoid and thyroid muscles are separated in the mid-line by blunt dissection, care being taken not to injure the underlying veins. If a wide exposure is demanded, the sternohyoid, the sternothyroid, and anterior belly of the omohyoid muscle are clamped across and cut either in one mass or separately. It is usually safe to cut the sternothyroid separately, as a better exposure of the underlying veins will be made after the two superficial

ones are cut, and less damage to the vessels is apt to occur. If, however, only a slight exposure is necessary, simple retraction of the muscles will answer the purpose. As the muscles are separated from the external capsule, the vessels are exposed.

Two important steps now present themselves:

1. Ligation of the superior thyroid vessels.
2. Incision of the external capsule.

The upper pole is now grasped with the fingers, separated from the surrounding structures, pulled forward, and the superior artery and vein ligated. If the goiter is very large it may be necessary to open the capsule previous to ligation. The middle vein is now tied and cut and the gland pulled well to the mid-line after a careful blunt dissection with the finger has freed it from the carotid sheath. The sheath is now open from pole to pole and the upper pole is dislocated downward and to the median line. Care must be taken in this step, or the parathyroid tissues will be included in the dissection. By keeping close to the gland structure the parathyroid tissue will be avoided, as will the recurrent laryngeal nerve. The dissection is now carried downward until the inferior thyroid vessels are exposed. These are ligated and cut. The isthmus is now freed from the trachea as the lobe is drawn to the opposite side; is clamped, ligated, cut through the mid-line and sutured over the clamp with a running suture, which is tightened as the clamp is removed. Another layer of suture is placed over this one. If both lobes are to be removed, a similar procedure is carried out on the opposite side. A puncture wound is made below the incision for drainage, and the wound closed in layers with especially good sutures placed upon the cut muscles.

Resection.—The preliminary steps in this operation are similar to those in the preceding one. I would like to especially emphasize the necessity of good exposure of the field here. After free exposure of the part to be resected, two methods can be pursued:

1. Ligation of the vessel to the part and excision after clamping off the part. The stump is then sutured over with a double row of sutures.

2. By removal of wedge-shaped portion of the gland. The Mayo technique is as follows: A series of Ochsner clamps are applied as follows: one at the superior pole, as a rule 1 inch from the upper extremity; one at the inferior pole; three or four laterally, placed in the larger vessels of the capsule, and two or three on the tracheal side. These forceps approximately placed serve the joint purpose of marking the limitations of resection and of enabling one to control hemorrhage by traction on them with support of the lobes from behind with the finger. The lobe is encircled with the incision through the capsule just above the forceps. The resection is then made by wedging out the interior of the gland.

Starting at either pole, a continuous mattress suture of plain cat-gut, from outer to inner capsule, is inserted behind the line of the forceps, originally placed on the capsule and continued to the other extremity of the lobe. This controls practically all the bleeding and obliterates the cavity in the center of the lobe. The same suture, returning in an opposite direction, by locking stitch catches the edge of the capsule and rolls the edges together in some semblance to a normal lobe. In this operation no danger of injuring either the parathyroid or recurrent laryngeal nerve arises.

Enucleation.—Exposure as in the previous cases. The surgical capsule is incised and the veins in it ligated. The true capsule and thyroid tissue over the nodule are incised until the nodule is reached. The opening in the gland is then stretched with instruments and the nodule carefully shelled out with the finger. Deep mattress sutures of cat-gut are inserted to approximate the edges and stop oozing. Drainage is used only if a large raw area is exposed, or if hemorrhage is likely.

These three steps will handle all of the cases in the first class. The surgical cases due to morbid changes of secretion are best treated by ligation operations, *i. e.*, ligation of the superior and inferior thyroid arteries.

SUPERIOR THYROID.

A transverse incision about 2 inches long, beginning near the mid-line of the neck and running outward, is made at about the level of the middle of the thyroid cartilage. The skin and platysma are cut through, then the deep fascia. These are dissected up and downward and retracted. The anterior border of the sternomastoid is retracted laterally and the omohyoid mesially. The vessel will be found rather superficial here, entering the upper pole of the gland. A double ligature of heavy chromic gut or linen is passed around it or including the pole, and tied, and cut across. The platysma and fascia are closed with interrupted sutures and the skin with a subcuticular stitch.

INFERIOR THYROID.

There are two methods of approach to this vessel, anterior and posterior to the sternomastoid muscle.

1. *Anterior.*—A transverse incision 2 inches long is made 2 or 3 cm. above the clavicle extending from the mid-line out over the body of the sternomastoid muscle. The skin and platysma and deep fascia with the anterior jugular vein are incised and dissected downward and upward. The edge of the sternomastoid is freed from its fascial attachment and retracted outward, and the sternothyroid exposed, freed, and retracted

inward. The lower part of the thyroid gland is exposed and should be retracted toward the mid-line. This opens the space between the carotid sheath and the gland. The inferior thyroid artery lies on a plane a trifle deeper than the common carotid and is covered by a fascial layer. This fascial layer immediately internal to the carotid sheath is split and the vessel is found lying on the longus colli running down and in from behind the carotid halfway from the sternal notch to the cricoid cartilage. In some cases it lies directly behind the mid-thyroid vein. This vessel is much more difficult to expose than the superior thyroid, the mistake usually being made in seeking it too low. After exposure the vessel is ligated and the repair made as usual.

2. *Posterior.*—This route was devised by Dr. John Rogers of New York, and is the only method used by him for ligating the inferior thyroid.

An oblique incision 2½ inches long is made over the lower end of the posterior edge of the sternomastoid. The fascia is incised near the external jugular vein, which often has to be ligated. The sternomastoid is retracted towards the mid-line and the sheath of the great vessels exposed and retracted inward. The dissection is now carefully continued downward until the outer edge of the scalenus anticus is exposed. This is the important landmark. Now the dissection is carried bluntly inward along the anterior surface of the fascial layer which covers this muscle; injury to the phrenic nerve that crosses the muscle posterior to the fascia is thus avoided. The carotid sheath with its contents is drawn forward and internally with a blunt hook. When the inner edge of the scalenus anticus is reached the tissues internal to it are opened bluntly with the index finger, and the inferior thyroid artery can be seen and felt just behind a thin layer of fascia, internal to the internal border of the muscle. The fascia is opened, the artery raised with aneurysm needle and ligated. Extreme care is necessary in this step because the wall of the artery is thin and easily torn, moreover the depth of the wound makes the control of hemorrhage difficult. The wound is closed with or without drainage, according to the amount of oozing present. This latter way is the easier if one knows definitely the anatomy; otherwise, he had better attempt the former method.

This covers, I think, the subject of the surgical anatomy of the thyroid and the necessary steps of a surgical treatment of pathological conditions of that organ.

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PATHOLOGY AND BACTERIOLOGY.

THE MEANING OF WATER ANALYSIS.

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I should first say that my subject is limited to the analysis to determine the sanitary quality, or the fitness of water for domestic purposes. The sanitary analysis is contrasted with other analyses, such as the mineralogical analysis to determine exactly the mineral substances in solution, or the boiler analysis to determine suitability for boiler use. It is a common mistake to look upon all these analyses as similar in purpose and method, and to believe that sanitary quality may be determined by analytical methods such as are used, for instance, in the analysis of iron ore.

Unfortunately, there is no simple test for good or bad water, and even if there were, its value would have a time limit, for an analysis of water, unlike an analysis of ore, does not apply to its past or future condition.

A sanitary analysis as usually made includes both chemical and bacterial determinations. It is my belief that the determination in an isolated sample of water from a domestic supply of alkalinity, chlorine, nitrates, nitrites, and ammonia is quite worthless in determining the suitability of that water for drinking purposes. These substances may all be affected by the degree of pollution, but they certainly depend in much larger part on the character of the strata from which the water has been removed. There have been many attempts to erect chemical and bacterial standards of water, but the laboratory worker has only to make a few analyses until he finds various samples which, according to the attempted standard, are chemically good and bacterially bad, or chemically bad and bacterially good. We may ask, then, Why not rely alone upon the bacterial results, such as total bacterial count and isolation of specific organisms? It is true that these results have far greater significance, but even they are not absolute, and require interpretation. The great difficulty is that it is hopeless to look for specific disease bacteria. It surprises us all to learn that the authentic instances of the finding of typhoid bacilli in water can almost be counted on one's fingers. Nevertheless it is because these organisms are suspected that an analysis is usually desired.

It is commonly believed that an analysis is an easy and certain method of finding out whether the suspected water has been the cause of typhoid

fever. That this cannot be the case is readily seen when we remember that it has been proven that the typhoid bacilli soon die in water, and by the time the water is suspected the typhoid bacilli have long since disappeared. The incubation period has elapsed, then another week or two before the disease is recognized, then later, often after the patient has died, or recovered, a sample of water is sent for examination.

Water-borne typhoid must be a very small percentage of the total in our State, yet we are only beginning to emphasize the danger of infection by direct contact and, indirectly, by the intermediation of flies when typhoid infected excreta are deposited in surface closets.

The search for typhoid bacilli is, therefore, nowhere one of the routine laboratory examinations. The usual bacterial examination comprises the total count and a determination of the presence or absence of B. coli.

Bacteria in water may be divided into two classes:

1. Normal water bacteria, which are always present, and which are harmless, so far as known. Their number varies greatly and, in my opinion, has very limited significance as to the sanitary quality of water.

2. Bacteria of animal origin, most of which also are nonpathogenic, but whose presence can be regarded only as a pollution. The most widespread of these bacteria, and those which may be regarded as the type, are the colon bacilli. These organisms are probably nonpathogenic except to infants, even when swallowed in large quantities. Natural cow's milk, as it reaches the human consumer, contains many thousands more B. coli per cc. than any drinking-water, and we all consider such milk a good food. The coli in milk, however, have a bovine origin, while in drinking-water they may come from human excreta. Human colon bacilli are an indication of danger because they are liable to be accompanied by specific disease germs, and their presence is therefore universally regarded as the best single indication of unsuitable drinking-water.

As already stated, an analysis refers strictly to the sample itself, and not to the source, except so far as it is truly representative.

We have examined in the State Laboratory of Hygiene more than 25,000 samples of water. About three-fourths of these have been of public supplies, the others of private wells and springs. I regard the latter as almost useless, except that we in the laboratory have been taught a good many things. It is almost invariable that an open-top bucket well has water with abundant B. coli, and that water from a deep bored well contains only harmless natural water bacteria unless contaminated at the surface. The health officer or physician should be able to tell more about a domestic supply from an examination of the local conditions than can the bacteriologist and chemist by a laborious analysis, especially if they have not exact knowledge of the source of the sample.

The large majority of the analyses of the State Laboratory of Hygiene were of samples from the various public supplies in the State. Here we have a known source and a regularly examined water. Each variation in chemical determination may have a meaning and may be compared with the preceding record. The source of municipal supplies is most often a surface stream, and while gross sewage pollution can be prevented, such streams habitually carry some bacteria of human origin. In order to obtain a safe, palatable, and satisfactory water it is necessary to use a system of filtration, supplemented by dosage with chemicals. It is no simple matter to run such a plant and keep up a daily efficiency. The laboratory examination is the best and, aside from the appearance and taste of the water, is the only means of ascertaining the quality of the filtered water. In contrast to the examinations of private supplies, which are comparatively useless, the State Laboratory of Hygiene believes that much improvement has been accomplished in the public supplies.

In addition to the regular examinations we have for months been making comparative analyses of raw and filtered waters from various plants, and we hope to utilize the data obtained for further improvement.

The practical ideal of each public supply should be a palatable water, free from bacteria of animal origin at all times, and one in which no trace of alum, and no taste nor odor of chloride of lime, should reach the consumer.

I have striven to make clear that a laboratory examination of water should be merely one part of water investigation, and that it is useless, in the great majority of cases, to hope to trace the origin of typhoid fever by an examination of water; but the necessity for a safe water supply remains one of the first requisites for the public health.

OBSTETRICS.

THE FUNDAMENTAL PRINCIPLES INVOLVED IN OBSTETRIC SURGERY.

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It is not my purpose, in the presentation of this article, either to discuss the merits and accomplishments of the brilliant leaders, past and present, whose skill and judgment have brought honor to this branch of medicine, or to deplore the mistakes that have been made in the name of surgical obstetrics by some enthusiasts whose greatest handicap is inexperience and others whose place is not properly in surgery or obstetrics, but to bring before you for thorough consideration a few important facts regarding this subject from the viewpoint of a general practitioner.

As every puerpera is a wounded woman, it is best to regard every obstetric case as a surgical case. It is good surgery to limit the operative wound, and avoid injuring tissues as far as possible. The same is urgently indicated in all obstetric work; so it is a surgical case with more than the usual surgical aspects. Like the surgeon, the obstetrician should have a clear knowledge of the patient's condition, especially of the heart, lungs, kidneys, and blood. He must know accurately what is going on during labor; he must be thoroughly acquainted with the mechanism of that particular labor, the strength the patient may bring to bear to withstand the ordeal, the strength of the powers of expulsion, the greatness of the resistance encountered and the relation between them. He must be aware of all possible complications and the particular ones likely to arise in this particular case; to know how, if possible, to prevent them, and treatment, should they arise. We must practice the strictest asepsis and antisepsis the latest standards demand, and forever keep in mind that the primary purpose of conception is reproduction, and that obstetrics is successful only when we deliver a live, healthy child from an unmutilated mother. If we practice this thoroughly and conscientiously we will begin a new era in obstetrics and bring this branch of medicine into a field more inviting to the ambitious physician, as well as conducive to a more rapid advance in both its science and its art.

Regardless of the surgical progress which obstetrics has made in the past few years, we have been unable to define distinctly the fields belonging to cæsarean section, high forceps, version and extraction, or even craniotomy and pubiotomy, and it is here the judgment of the obstetri-

cian is put to the test, when in the course of his study of a case he is determined that some method of delivery is imperative in the interests of mother or child, or both. It is here that there are no situations in medicine or surgery that require broader knowledge, more logical reasoning, for their control than do these problems; at the same time we must remember the most important indication in all obstetric work is to interfere only when the mother or child is in danger. It is art to enter only when Nature fails.

Except for the few cases in which hydrocephalic heads and monsters are encountered, craniotomy and the other mutilating operations on the child have no place in obstetrics, except on the dead fœtus.

Pubiotomy, to my mind, is barbarous, though held by some as having a limited field. If patient be slenderly built, she may recover sufficiently to walk, but never with any degree of ease or comfort; if stout, she is more or less a cripple the rest of her life.

Cæsarean section in this day of advanced surgical progress is being robbed to a great extent of its former terrors of infection and is no longer considered a last resort procedure of utmost danger. Statistics still show a rather high mortality rate; yet, if these cases are carefully analyzed they will show the bulk of the fatalities can be traced to careless obstetricians who allow their cases to drag until patient is exhausted, or becomes infected, finally sending them to the surgeon to do the best he can. Unquestionably many women and babies have been saved by this procedure that would have been hopelessly lost by any other operative means; and it is true that many have died by the very means intended to save their lives; but a death following operation is the exception, if done in time. Still there is a wide range of opinion as to the indications for its use.

In a general way cæsarean section is indicated in marked contracted pelves, abnormally large child, and some cases of placenta previa, especially the central variety, when dilatation and delivery cannot be properly effected in the presence of violent hemorrhage. The mortality, maternal and fœtal, is less in cæsarean section than in placenta previa. This may seem a bold statement, but, nevertheless, it is true. In the various toxemias of pregnancy, where rapid evacuation of the uterus is imperative in the face of a tightly contracted cervix so often encountered in a primipera, it eliminates forcible dilatation of the cervix and the trauma incident to such a procedure both to mother and child. It is also indicated in occlusion neoplasms, such as cancer of the cervix and fibromata of the lower uterine segment. It is in this class of cases the field of cæsarean section is increasing. Here again I lay especial stress on the general practitioner who undertakes to deliver a woman, to study his cases before

the expected date of labor. If you find contracted pelvis, unless it is very marked, our decision for operation should be based on the degree of contraction, size of child's head, and its reducibility, for the purpose of determining if the patient in question can be delivered safely at home, or is the hospital to be preferred, as the best hospital facilities are none too good and trained assistants are very essential.

It is upon the general practitioner, especially in our rural districts, the grave responsibility rests of seeing and recognizing these conditions early enough that something may be done to save these valuable lives. It is too late after they have become exhausted, infected, or injured by the injudicious attempts at delivery by the hand or forceps. I will go so far as to say that every general practitioner should be able to form at least a fair estimate of the amount of contraction, as it is far easier to measure a contracted pelvis than a normal one. Such an estimate should be within the skill of an ordinary general practitioner, on whom so many lives are dependent. If not, he should sink to the level of the ordinary ignorant, meddlesome midwife.

While the enlargement of the field of this operation marks one of the advances made in modern obstetrics, it does not mean that the operations of high forceps, accouchement force, version and extraction, the operations that have served us so well in the past, are to be relegated to the background. They will continue in their place as long as women have babies.

The vital importance of a diagnosis of extra-uterine pregnancy cannot be too greatly impressed on our minds, because a failure of a diagnosis, in a great many cases, means a fatal result to the patient. With a patient complaining that she thinks she is pregnant, or did a while think she was pregnant, with some menstrual disturbance, as she has missed one or more periods, or they are irregular, with cramp-like pains in lower abdomen at intervals of several days or weeks, following the pains she sometimes has a very dark bloody discharge, and considerable time has elapsed since the birth of her last child, don't be misled by a hasty diagnosis of abortion, or threatened abortion, but keep in mind this form of pregnancy until the pelvic examination clears the diagnosis; being very careful in making pelvic examinations, for fear of rupturing the impregnated tube. Most cases, however, do not come under observation until after rupture. Then what is more characteristic than the sharp, agonizing pain, severe enough oftentimes to make patient faint, accompanied by nausea, vomiting, thirst, great restlessness, subnormal temperature, and collapse. These, together with an internal examination, tell the tale, and will deliver your patient at the very threshold of death in a very short time if proper treatment is not instituted.

What is the proper treatment? These women, without exception, are desperately ill from the moment of rupture, and a great many recover under "watchful waiting" treatment. A woman may live a long time with a ruptured ectopic pregnancy in her abdomen—may be months, possibly years—and recover; but, in the writer's opinion, treatment is exclusively surgical. While recovery in some cases may eventually take place under expectant treatment, the larger proportion will be saved by prompt abdominal section and removal of the affected tube and its contents. The rupture case is one of hemorrhage, and to arrest the bleeding here is as imperative as to secure the severed ends of blood vessel in any other part of the body. The peril is too great to indulge in unnecessary delay; therefore, the operation is clearly one of emergency, often to be done immediately on seeing the patient and recognizing the condition, with all the haste that is compatible with due regard to reasonable aseptic precautions, often under the most unfavorable surroundings.

Lastly, no matter what the degree of perineal laceration, the immediate repair by suture is urgently indicated, unless the condition of the patient is so serious as to contraindicate it at once. It is then sometimes advisable to wait twenty-four hours, never longer, unless the delay is for several months. If we attend to these things promptly and properly we will greatly lessen an immense amount of invalidism resulting from childbirth. I venture to say at least 50% of women who have had children bear the marks of injury, and this explains why every year hundreds of thousands of women flock to our hospitals for the late consequences of neglected cervical and perineal lacerations.

The conduct of labor is not a simple matter intrusted to every one. Educate the people to know that having a child is a very important affair, deserving the watchful attention of a qualified practitioner, and that even a normal confinement is worthy the dignity of the greatest surgeon.

PITUITRIN IN OBSTETRICS.

C. H. Pugh, M.D., Stanley.

The recent successful introduction of the pituitary extract into the list of drugs used by the obstetrician and the amount of discussion in regard to its advantages and disadvantages is my reason for presenting this paper.

After having promised the chairman of this section (Dr. Garrison) to write an article upon this subject, I realized that my experience had been too limited to add anything from a standpoint of statistics, for the conclusions I have formed are based on a series of fifty cases occurring in general practice. This is a small number, indeed; but it has been so uniformly successful in these cases and so practical is the subject that I feel justified in discussing it before this society.

As is well known, the pituitary gland consists of two lobes, an anterior and a posterior, but only the posterior concerns us in this paper. Extracts of this lobe cause a rise in blood pressure and a slowing of the heart beat. It causes a dilatation of the renal vessels, an internal secretion of the urine, a dilatation of the pupils, and stimulates the musculature of the uterus, intestines, and bladder. It has been called a "utero-vasculo-heart tonic." However, the drug has achieved its greatest success as an oxytocic, and there can be no doubt that it is the most valuable agent we now possess for that purpose.

The preparation I use is Park, Davis & Co.'s "Pituitrin," put up in 1 cc. ampoules. The drug is administered intramuscularly, usually in the muscles of the arm. Uterine contractions begin in from three to twelve minutes after injection and continue from forty to sixty minutes. The contractions are increased in intensity and the interval diminished. In other words, it increases the power and frequency of ordinary labor pains.

Pituitrin is of decided value in uterine inertia, primary or secondary, and in post-partum hemorrhage. Its greatest value is in the uterine inertia occurring in the second stage of labor. Here, in many instances, its action is little short of wonderful. Many women are able to dilate the cervix, but make no further progress, or may fail to engage a head in a slightly contracted pelvis, or may partially advance the head through the birth canal, or may even bulge the perineum, and then succumb to exhaustion. For one reason or another it is usually the second stage of labor which has brought about exhaustion, so fatal to our hoped-for spontaneous deliveries. It is in these cases that pituitrin shows its remarkable qualities, terminating sometimes in a few minutes cases which have dragged on for a long time with no indication of advancement, or quickly changing a slow and exhausting case, with the pains weak and far apart, into forceful, efficient bearing-down pains. Through its agency many of the cases that would linger for hours and then possibly necessitate the use of instruments are terminated in a short time with no harm to either mother or child and no more effort on the part of the physician than the giving of an ordinary hypodermic. The result is a lessening of the suffering and mental and physical fatigue of the mother.

The drug has a much larger field of usefulness in multiparæ than in primiparæ. In primiparæ there is usually more obstruction; the tight perineum is too easily torn to allow a rapid delivery, such as follows the use of pituitrin. In most of my cases of primiparæ, where there is an indication of a decrease in the pains either in intensity or frequency, and where there is good dilatation, I usually give ½ cc., to be repeated in thirty minutes if the pains are not harder. This method has invariably been attended with good results.

In the third stage of labor I am convinced that there is less hemorrhage after delivery in cases treated with pituitrin than in those in which it is not used. The action lasts after the delivery of the child and tends to prevent relaxation of the uterus. The placenta is more easily separated, usually descending into the vagina in a few minutes, and being expressed spontaneously or by easy pressure on the fundus. In no case in which I have used pituitrin has there been constriction of the cervix or retention of the placenta.

As to the toxicity of the drug, there seems to be abundant testimony in favor of the harmlessness of the drug, to either mother or child.

Pituitrin should never be given unless the cervix is three fingers dilated at least, except in tentative doses to stimulate the pains, because if given in full doses sooner the severe contractions produced may cause pressure on the fœtus, rupture of the uterus, or severe laceration of the cervix or perineum.

The drug is not indicated and should not be used in cases steadily progressing, with good pains. In such cases there is no definite indication for artificial aid, and I do not think it right to use the drug without definite indications. Its routine use in all cases would be a great mistake. The drug is definitely contraindicated in any malposition such as transverse presentation, in case of impassable obstruction, or where the child is too large for the birth canal. It should not be used where the uterus is much stretched out and thinned from a twin pregnancy, hydrocephalus, or one that is atonic from any cause. Pituitrin should never be used in full doses unless we can be sure of the diagnosis of the position of the child.

I firmly believe that more damage occurs to the perineum in cases in which pituitrin is used than in corresponding cases of spontaneous delivery, owing to the rapidity of the delivery in many cases. However, when this is offset by the number of forceps deliveries from which patients are saved, and the relief that comes to mothers who otherwise would have long hours of physical suffering and anxiety, the balance certainly is on the side of pituitrin.

In conclusion, pituitrin will avoid a large per cent of operative deliveries when combined with careful preliminary examination and a close observation of the progress of labor.

The third stage of labor is shortened and there is less bleeding after the delivery of the placenta.

Its greatest field of usefulness is in the second stage of labor, especially where there is much uterine inertia. It should not be used until there is good dilatation.

It should not be used where there is much disproportion between the mother's pelvis and the child's head, or where there is serious obstruction from any cause.

Its usefulness is limited, but is of some benefit in the first stage of labor.

The apparent harmlessness of the drug, its easy method of administration, its satisfactory results in properly selected cases, the saving of many patients from operative delivery, the almost immediate termination of labor after hours of tedious waiting by the physician and painful and exhausting labor for the patient, and the fact that one can find help in its administration without the necessity of sending for another physician —all make a very strong appeal to the general practitioner, because he is the man who needs just such an addition to his obstetrical methods of practice. I consider it the most valuable agent that has been added to our obstetrical equipment in recent years.

Dr. D. A. Garrison, Gastonia: Dr. Spears was to be here from New York, to speak on "Twilight Sleep," but he wired me yesterday that he couldn't come. I haven't anything to say, as it was a subject that I expected to write on myself, and I decided to get him, he being an authority; so I have no paper on the subject.

Dr. E. T. Dickinson, Wilson: I am somewhat responsible for Dr. Morton, so I am speaking to take up time until she gets here. I am sure that Dr. Pugh's paper was a very creditable one. I want to say a little with regard to my experience with pituitrin. It was for more than a year that I used pituitrin rather freely, and got regularly no results. I had heard so many men say that it was such a splendid remedy that I kept trying to get a case that I could get an effect in; but it was as much as a year before I ever got a dose to take effect. I wish now that I had never found a dose, not because it is entirely out of place, but because it is a remedy that carries too much potency and inducement. It is a remedy that has the same inducement that making frequent vaginal examinations has. The object of the use of pituitrin is not always for

the benefit of the patient, I fear. The object of making frequent examinations is not for the benefit of the patient. It's for the benefit of the doctor, to know when he can go, whether he will get home in time for dinner. And the same inducement applies to pituitrin. I don't believe that it is possible for human nature entirely to overcome inducements, and therefore I believe that pituitrin is a remedy that will do more damage, all told, than if we did not have pituitrin. I find that pituitrin is active now, every time, because I take the fresh substance that has been kept in an ice box or refrigerator. It becomes inactive by lying in the obstetric bag for some time. The first year I allowed my pituitrin to lie in the bag long enough to become inactive. I think the contra-indications that were mentioned by Dr. Pugh will exclude pituitrin entirely from the practice of obstetrics. He says it is dangerous to use it in a thin uterus. Now, it is impossible to tell which is a thin uterus. Other and very numerous contra-indications are mentioned by every one that are almost impossible to determine before death. Let us use this remedy only with prayer and thanksgiving, solely for the benefit of the patient.

Dr. L. D. Wharton, Smithfield: I would like to take issue with Dr. Dickinson in regard to the use of pituitrin. I do not see why we could not have, and we have had, the same objections to the use of forceps in labor as pituitrin, in order to save time and get home. I also take issue with him in regard to the good to the woman. It seems to me if we are ever justified in the use of a drug, it is when we can save a woman hours of suffering. We can undoubtedly save her that by the use of this remedy, and who can estimate the possible saving to the child? We often have uterine inertia, and when the other indications are present I see no reason why we should not use it. Another point I wish to make in regard to the use of pituitrin is this: I have found that there is not much danger in using it, even when dilatation is slight, *late in labor*. For instance, if the woman has been in labor some twelve or eighteen hours or longer, and yet there is insufficient dilatation, then I have found its use effective and harmless. I have given it in primiparas as well as multiparas in what was considered insufficient dilatation, but in both instances it was late in labor, and in neither instance was there any bad effect whatever.

Dr. Cyrus Thompson, Jacksonville: I desire to commend the general wholesomeness of Dr. Pugh's paper and to emphasize the fact that practitioners generally do more damage than good by the use of pituitrin. If it is used at all, it ought to be used in very small doses. If you give the ordinary dosage in ordinary cases, even as much as Dr. Pugh has

stated, it is altogether possible that you may do a considerable deal of damage. Dr. Dickinson has said that he used it for a year and got no effect from his dosage whatever. He explains that by reason of the possible deterioration of his product. I used an ounce of pituitrin over a period of from twelve to eighteen months, and the last of my specimen was just as effective as the first. I don't know anything at all in the nature of a drug that is more dependable for effect than pituitrin. You always, if your labor is at all in progress, get definite results from the dose.

Now, in a general way, I want to say this, that as to the use of pituitrin and as to the use of forceps, the practitioner in general is too much inclined, and therefore inconsiderate of the woman, to rush to the use of something that saves him time. I think, and I think that it ought to be emphasized and impressed upon the profession everywhere, that every labor ought to be left to come along normally, if it can be completed so, without the use of pituitrin, forceps, or anything else, and no labor ought ever to be hurried up for the saving of the attendant's time. When you attempt to save time, it saves it for you at the expense of the woman who has been put into your care. I never give more than from three to five minims. I have given a little more than that sometimes, and have said to myself, "Behold, how great a matter a little fire kindleth!"

GYNECOLOGY.

NEURASTHENIA IN RELATION TO GYNECOLOGY.

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Mr. Chairman, Members, and Guests of the Section:

May I take this opportunity to express to you my pleasure in attending this meeting of the Medical Society of the State of North Carolina, and to tell you how greatly I have been interested in the papers which have been read?

When three years ago I was first asked to lecture to the post-graduate students at the New York Polyclinic Medical School and Hospital, I thought I should be taking "coals to Newcastle" in doing so, for there are no physicians and surgeons in the United States better posted or more capable of good work than those who come to refresh their minds and keep in contact with the latest work being done in that city. The majority of men and women physicians who come to the Polyclinic Hospital are from the Southern States. Having been born in Virginia, I know well the work of many doctors there, and, realizing that they are typical of the practitioners throughout the South, I am convinced that those of us who live in the great medical and surgical centers could learn more from you than you can from us. The unselfishness and willingness with which you go, in all kinds of weather, on all sorts of roads, at all hours of the day and night, to all classes of patients, often finding on your arrival nothing of which you can make use, and no trained assistance, taxes the mental and physical capabilities to a degree which we do not fail to appreciate, although we have lost our resourcefulness through becoming used to having everything well prepared for us in large hospitals, and trained nurses to go before and put things in readiness for us in the homes of patients, as well as colleagues upon whom we can always call to help us meet any emergency.

In contrast to this, I have known a Southern physician, covered with beads of perspiration, suffering acutely with malaria, to go in a cold rain 10 miles in the country to see a patient, not half so sick as he, and on arrival, finding the family poor, leaving a supply of medicines and refusing to accept a fee. And also a surgeon called at 2 o'clock in the morning to a patient he had never seen before, by a messenger who could

give no further history of the case than that the patient was suffering with cramps. Hastily preparing to meet whatever emergency he might find, the surgeon drove up in the mountains and found a man at the point of death with a perforated appendix. No basins or other conveniences for work, outside of those he had taken with him, were to be had. It was necessary for him to etherize the patient and operate at the same time, every moment watching pulse and respiration, and turning quietly from the surgery, as soon as the patient showed signs of coming from under the anesthetic, to etherize him, and as soon as he was relaxed, turning again to his abdominal work; the family in the meanwhile surrounding him in a state of panic, he calmly, deftly, and courageously met the situation in a manner which showed it was no unusual occurrence for him to meet and conquer death, by the combined force of ability and those elements of character which make the truly great. Colleagues of the South, what is there to teach such physicians? And yet these incidents are so usual, no doubt mentioning them brings similar experiences to the minds of each man and woman present.

My hope in coming to you has been that I might be able to present a helpful point of view regarding "Neurasthenia in Relation to Gynecology." I have, therefore, decided in the limited time at my disposal, not to dwell upon the nerve fatigue resulting from the more obvious pathological gynecological conditions caused by trauma, inflammation, and growths of various kinds, but to take up a few points not so frequently accentuated, and upon which I should greatly value your discussion, namely, fatigue, congestion, and auto-intoxication.

Primarily, it is of interest to consider whether the question of neurasthenia in women, as compared with men, is not somewhat overestimated.

Six years ago I had the honor of organizing for the American Medical Association, as the first chairman of their committee on Public Health Education, courses of lectures, to be given to the public throughout the United States through the county medical societies, on the causes of preventable diseases; and in the series of eight to twelve lectures which have been given for the last six years, under the local division of this National work by the Public Health Education Committee of the Medical Society of the County of New York, there has always been a lecture dealing, from one point or another, with "The Causes and Prevention of Nervous Exhaustion." We have observed that although this lecture was given at 3:30 in the afternoon, when most men are engaged in business, invariably a larger proportion of the audience have been men than at any other of the series of lectures, and that many of them have stood throughout the one and one-half to two hours given to the discussion of

neurasthenia, which suggests that they took a very personal interest in the subject. On one occasion, when presiding, I laughingly said that every one in New York had had, or expected to have, nervous prostration, due to the stress and strain of life in that metropolis; but on receiving the reports of similar lectures from all over the United States, I learned that this subject was always one that interested a large audience; that many men were invariably present, and asked questions from the floor following the lectures.

Several years ago, at one of the scientific meetings of the New York Academy of Medicine, a paper entitled "The Neurasthenic Woman" was presented, and 60 per cent of the cases quoted in the paper were men, showing that the author had chosen what he thought a popular title, rather than one accurately describing his paper. This led me to consider the causes which, in both men and women, produce neurasthenia; and then to focus upon their special relation to gynecology.

When we carefully consider nerve *fatigue*, we realize that it is as common to men as to women. In the average family the men are obliged to use as much energy in doing $15 worth of work to earn $5 as the women of the family use in making $5 do the work of $15, and from the beginning of history to today, in studying the activities of men and women, we find that through the various evolutionary epochs women have had as much responsibility, though of a different kind, and as many causes for nerve fatigue as men. Therefore, if the number of cases in women do not greatly outnumber the cases of neurasthenia in men, we may assume that fewer are of gynecological origin than is customarily supposed. In order to verify this, in preparing a paper on *"The Effects of Industrial Strain on the Working Woman," I made a study of the employees of six of the large department stores in New York City, in which women are employed, to ascertain the use made by them of the rest-room, or emergency hospital, situated in the store. I found that the average temporary illnesses showed that the number of employees who sought relief was divided between men and women in about equal ratio to those employed. Of the women patients, approximately one-third suffered from headache, one-third from indigestion and miscellaneous ailments, and only one-third had menstrual disorders, which makes a very small proportion out of the total number of employees. For instance, in a store which employed 3,000 women, there would average not more than ten a day who went to the rest-room for a few hours on account of dysmenorrhea. In one of the stores which employed approximately 3,500

*Read before the Section on Hygiene of Occupation of the International Congress of Hygiene and Demography, Washington, D. C., September 26, 1912, published in the *American Journal of Obstetrics and Diseases of Women and Children*, Vol. LXVII, No. 1, 1913.

women, the nurse who had been in attendance for eight years said that she knew of only fifteen cases of permanent pelvic trouble brought on by work in the store.

In one store, which is situated at the junction of several surface and elevated street car lines, the daily attendance in the store hospital was double that of a store in a more quiet location. The ventilation of the former store is also poorer than in the latter. The proportion of those who suffered from dysmenorrhea was larger in the store which was not so well ventilated and which was noisier, showing that fatigue had a distinct effect upon health during menstruation.

A study of the 3,800 employees in the head office of the Metropolitan Life Insurance Company showed that absences for sickness, which had been greater among the women than the men, were reduced to an equal ratio after the Metropolitan began furnishing a wholesome lunch for its employees, as the average amount paid by young women for luncheon was 15 cents as against 30 cents paid by the average man doing the same work. The fatigue resulting from lessened nutrition had such an appreciable effect upon the work that the life insurance company has found their provision of luncheons a wise economic step.

In many cases adjustment of the mental, emotional, and physical strain under which a woman lives removes gynecological disturbances which were supposed to be of pelvic origin, but which were really secondary to malassimilation, poor nutrition, anemia, insomnia, etc., induced by fatigue.

Congestion associated with, or independent of, misplacement is of anatomical interest, for the uterus has normally ample room for its premenstrual increase of size and weight, and the increased circulation in the pelvis at that time, by adding tone to its supporting ligaments, counterbalances the ptosis-producing effect of gravity. The increase of circulation is exemplified in the usual free movement of the bowels, just before menstruation begins, in persons ordinarily constipated. Any misplacement interferes to some extent with circulation, and congestion results, which may or may not produce *pain, according to the manner in which the rectum accommodates itself to the permanently retroverted uterus; for, if it passes to one side of the uterus, instead of back of it, unless the patient is constipated, there is no pressure on the sacral plexus, and the patient does not have backache. This difference is clearly demonstrated when, if there are no adhesions, the uterus is lifted well forward and kept in normal position by a pledget for twenty-four hours; the first bowel movement causes the rectum to resume its proper position posterior to

*See paper on "Dysmenorrhea" read before the Medical Society of the State of New York, Section on Gynecology and Obstetrics, April 30, 1914. Published in *New York State Journal of Medicine*, January, 1915.

the uterus; when the pledget is removed, and the uterus drops back, it presses the rectum and contents against the sacral nerves, and at once the patient has a sensation of weight and pain not experienced before.

The dull feeling of being below par, without definite symptoms, comes more often from pelvic congestion and slight pressure than from any other cause. The relief which follows permanently restoring the uterus to its normal position is marked. Of the many operations in use for this purpose, I have found a modified form of Gilliam most satisfactory, *i. e.*, drawing the excess length of the round ligaments through the internal ring, and fastening them to the abdominal muscles, by stitches, which do not interfere with the circulation in the ligaments; especially valuable in this connection is a suture which suspends and does not constrict the end of the loup.

A case in which this was done was that of Mrs. C. G., 34 years old, who had been for seventeen years, off and on, in sanitariums in Europe and the United States. When her family went abroad to travel they took her across the ocean, and, as she was not strong enough to tour, left her in a Swiss, German, or other sanitarium, in a convenient place to pick her up again, while they had weeks or months of interesting travel. This naturally depressed her, and on one occasion, because of her apathy, a bucket of water was thrown on her, as she made no response. The next day the nurse was instructed to start a series of petty persecutions to arouse her. She, however, endured them silently, and was given up as an incurable neurasthenic. In another sanitarium her food was put at the foot of her bed and she was told if she was hungry she would get it. She said the effort seemed to her more than the food was worth, as it made her back ache to sit up and reach over, so she let it alone. Under this and similar treatment she continued to become more nervously unstable, and one day attempting to run away, was classed as mildly insane and put under constant observation. Finally she despaired of ever feeling well and, giving up the struggle, settled into invalidism. Some years later, on account of insomnia and headache, she came to see me; as she seemed exhausted out of proportion to the symptoms of which she complained, and said she always felt weak and faint when standing, and that automobiling tired her excessively, I told her I thought a complete physical examination necessary to make a diagnosis. She said, "Do you mean my whole body? I have never been examined except for my nerves." I found family history negative; the appearance of her face, eyes, skin, teeth, and nails normal. Throat and nose normal. No enlarged glands in neck. Temperature 98.8. Lungs normal. Heart, anemic murmur accompanied second sound; pulse 80, weak and regular. Blood pressure 90 in both

arms; hæmoglobin 60. Spine normal. Nerve reflexes of pupils, elbows, knees and heels normal. Abdominal contents normal, except pain on deep pressure over appendix. Pelvis: left ovary prolapsed, a little enlarged, and sensitive; uterus retroverted; rectum to side of uterus; no constipation. She felt strained when uterus was lifted; complained of pressure when it returned to retro-position. Chemical and microscopical analysis of 24-hour specimen of urine normal. Height 5 feet 3 inches; weight 98 pounds. I operated on her at the New York Polyclinic Hospital January 18, 1915. Replaced uterus by method described above; punctured cysts of left ovary; removed chronically inflamed appendix. She left hospital February 9th, and gradually gained strength. Advised her not to force herself at all, but to realize that although the cause of her neurasthenia was removed, it would take several months for her to recover nerve, and general tissue, tone.

In order to give her an entirely constructive viewpoint, I explained to her the experiments of *Dr. George W. Crile and showed her microscopic appearance of an area of the cerebellum of the normal fox, as compared with the cerebellum of fox chased by hounds; area from normal cerebellum of electric fish, compared with area from cerebellum of electric fish exhausted by discharge of electric shock; section of normal cerebellum of rabbit, compared with section of cerebellum of rabbit after 109 hours of insomnia, the normal in each instance showing plump cells with clear outline, firm nucleus and nucleolus, staining easily. Those which showed effect of fear, fatigue, and insomnia were flat, vague in outline, with disintegrating nucleus and nucleolus, and were pale. I explained to her the value of rest, sleep, food, oxygen, and happiness to restore fatigued nerve cells to their normal condition, the last being best secured to human beings by an impersonal mental and physical occupation.

It seemed to me of psychological importance that she should realize there was nothing peculiar about her case, and I thought the time was well spent in which I made her condition clear to her, as her coöperation was necessary; in order that she should not become discouraged by the days in which one tires easily and which are a normal part of every convalescence. Cheerfulness and hopefulness are insured by education of the patient. She went to California on March 2d and in May I received a joyous letter from her, saying that she was gaining weight and felt better than she had ever hoped to. June 1st she wrote: "I used to say that I so longed for just perhaps two days of perfect health, and now I have it galore."

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*See Kinetic Theory of Shock, *The Lancet*, July 5, 1913; and Anoci Association, W. B. Sanders Co., 1915.

There is something pathetic in this example of over-specialization, for the relation of gynecology to neurasthenia had never been considered by the many eminent specialists who had failed to diagnose her condition. The years from 17 to 34 are sad years to spend in sanitariums, with a naturally bright mind clouded by apprehension and depression.

On the other hand, if one may judge by the views expressed in several eminent text-books, many gynecologists think the majority of women are neurasthenic, and that this may invariably be attributed to some gynecological derangement. This opinion must result from the fact that these physicians are so busy caring for the health of those who are ill they have no time, opportunity, or occasion to see or consider the overbalancing number of women who are perfectly strong; and these physicians' minds being focused upon their specialty, they seldom consider the probability of the neurasthenia being due to a defect in one of the *special senses, faulty posture, cerebral or other congestion, lack of balance in the internal secretions, nephritis, or other organic cause, blood dyscrasia, malaria, or other systemic abnormality.

It does not seem to me fair to make the general assumption that a woman is irritable and capricious because she is a woman; that her potential motherhood makes her unstable, or that a diagnosis of neurasthenia should be superficially made. Yet this is done so frequently that thousands of cases are so named year after year by physicians who make no effort to make an accurate diagnosis by means of a thorough physical examination.

The tradition of the frailty of women may be due to the fact that women generally wore tight stays in our grandmothers' time, and many led a sedentary life, both of which favor pelvic congestion. A short time ago, at the Colony Club in New York, a loan exhibit of the dresses worn by ladies from one hundred to fifty years ago showed that the customary figure was slightly drooped, with rounded shoulders, a pinched waist, prominent abdomen and overskirts which hampered free walking, which was also interfered with by the footgear of the period. How strikingly different are the costumes worn by the more athletic women of today, who ride, fish, hunt, go camping, mountain climbing, swimming, rowing, and winning championships in golf and tennis! Although it may seem remote, an erect bearing and free swinging walk do much to reduce neurasthenia, not only by reducing pelvic congestion, but by preventing the lowering of the costal attachment of the abdominal muscles; for as soon as the shoulders are bent there is an immediate sagging of the abdominal

*"Constitutional States in Relation to Gynecological Conditions," read before the New York Academy of Medicine, Section on Gynecology and Obstetrics, May 26, 1914. Published in *New York Medical Journal*, August, 1914.

walls, which permits ptosis of the stomach and intestines, and which, through producing angulations and misplacements of the colon, rapidly leads to *auto-intoxication.*

A case under my care last year, Mrs. C. D. of Vermont, 50 years old, suffering from pelvic congestion and severe brachial neuritis, gave a history of two previous attacks of neuritis, one in right arm, one in left arm, and of having been under the care of a distinguished gynecologist, on and off, for years. She was treated by him for an inflammation around the external os which was associated with small serum-filled flat cysts which varied in number and which, on being opened, together with vaginal treatments, relieved the congestion of the uterus for several months. When she began feeling pelvic discomfort she would return, complaining of "heaviness," and have more "blisters" opened. These were accompanied by an irritating and profuse leucorrhea which would last for several weeks and disappear, together with the blisters, under treatment, only to reappear in a few months. Although she saw no relation nor immediate importance in the fact, I learned that she had "a poor appetite and a weak stomach," that her father had been subject to "nervous dyspepsia, associated with acute attacks of neuralgia and melancholia, lasting for several months every year." From her 18th to 20th years she had attacks of "inflammation of the bowels," recurring at intervals from one to six months. Her abdomen was distended, pain was on the right side in the region of appendix. She had morphine and rest in bed for two weeks; attacks gradually diminished, although she was not able to attend school for two years.

From the time she was 29 to 39 years of age she had recurrent "intestinal attacks," one or more yearly. When 29 years old, for the last nine weeks before her first child was born, she fainted so frequently she was obliged to stay in bed continuously for six weeks. The last three weeks she was able to be up part of the time. After delivery her bowels did not move for ten days.

She had neuritis in left arm in 1905 and went to a sanitarium for three months. In 1911, neuritis in right arm. Third attack, the one which brought her to New York, began in right arm in October, 1913, increased in severity during January, February, and March, 1914. She came under my care April 25, 1914. Electricity, massage, rest, fomentations, and other applications, as well as tonics, had been used in this as in previous attacks; each time she failed to improve until she went to a sanitarium and spent most of her time in bed or on a restricted diet. This attack had yielded to nothing. In January her right arm began to swell, and when I saw her in April she could not lift it nor bend any of

the joints of her hand or arm. The skin had the glazed appearance suggestive of auto-intoxication. The reflexes and nerves from their spinal origin to the finger tips were normal in their response to touch, heat, pain, and showed no reactions of degeneration. The localization of myalgia in the arm I attributed to fatigue, as when the duties of the day were done she spent her evenings writing to her children, or knitting, while her husband read aloud, local fatigue thus accumulating without her being conscious of it, as her mind was diverted. The history of the recurrent attacks of "inflammation of the bowels" suggested an intestinal origin for the myalgia. I advised her to have a series of X-ray pictures taken of the entire gastro-intestinal tract. These were made by Dr. A. Judson Quimby. The bismuth meals and enema showed stomach normal; no ileal obstruction; ptosis of cæcum, the caput resting in the pelvis behind the center of the ilio pectineal line; band constricting ascending colon at junction of its middle and upper thirds. Picture taken standing showed a double angulation at the hepatic flexure; the first portion of the transverse colon bending acutely down on the ascending colon, with a second acute angulation 4 inches below this, at the point where the transverse colon started to ascend. These were not bound by adhesions, as they could be separated by manipulation, but immediately recurred. Sigmoid showed a closely coiled loop at its junction with descending colon. From this point it passed in a straight line transversely across the entire pelvis to a point directly behind the cæcum, and from there into the rectum by means of another loop.

Intestinal tract is normally empty in 35 hours, and 30-hour pictures should show bismuth only in sigmoid and rectum, but in her case the 54-hour pictures showed residue of bismuth in cæcum and throughout large intestines, and it had not all passed out until 78 hours after bismuth meal was taken. Even this showed less stasis than usual for her, as the X-ray pictures were made while she was remaining in bed in the hospital, and in the prone position the deformity of the colon disappearing, permitted better drainage than when she was up and around. The pressure of the cæcum against the sigmoid interfered with the evacuation of the bowels, this together with the double angulation at the hepatic flexure; and the 78-hour stasis produced a condition of auto-intoxication which in turn led to anemia and faulty nutrition of the nerves, the toxins of fatigue affecting the part most used. At the same time the mechanical obstruction in the pelvis produced the supposed unrelated recurrent congestion of the uterus.

Treatment consisted principally of requiring the patient to take food at 5½-hour intervals, and to lie down with foot of bed raised for 1 hour, 4 hours after finishing each meal. This insured her taking food when

she was rested, and at the same time lifted the cæcum above the pelvis and straightened the double angulation at the hepatic flexure at the time when food was passing through the cæcum and ascending colon. Sleeping at night with the foot of her bed raised permitted the peristaltic wave to carry the fecal residue through the colon without difficulty and prevented any obstruction in the distorted sigmoid. Therefore she had regular and complete evacuation of the bowels in the early morning; her auto-intoxication gradually disappeared and the neuritis was eventually cured. This treatment began May 3d. She left the hospital June 6th very much improved and continued this postural treatment, combined with a simple nutritious diet, including two glasses of buttermilk a day. On October 28th she wrote me that she was feeling perfectly well, able to use her arm freely and engage in all of her domestic and social duties. On December 24th she came in to see me and was looking ten years younger than the previous spring. For the first time in ten years she had passed nine months without pelvic discomfort, and on examination there were no cysts, leucorrhea, or any evidence of pelvic congestion. She has continued to lie down as directed, and is now traveling in the West and in perfect health. She understands that taking this simple means will prevent the recurrence of periodic illnesses from which she has suffered from the time she was 18 years old. It would seem reasonable to diagnose this case of neurasthenia, myalgia and pelvic congestion as of colonic origin.

Case No. 3, Miss M. C., New York, age 42. Was an 8 months infant, but a well child up to the age of 9. Poor health which developed then has been continuous. Frequent and severe headaches until 17, when they became constant. When 10 years old was out of school part of one winter with "slow fever." Severe neuritis in arms developed during 12th year, came on daily at 8:30 in the morning. Began menses at 12; painful from the first. Had many severe attacks of neuritis in right arm, later in both. Wore arm in sling for a month, unable to move it. Pain more severe in cold weather. Frequently arms became numb when lying on them, and were so painful they woke her up repeatedly during night. These attacks lasted from 12th to 21st year, and she was rarely unconscious of her arms. Had first internal examination at 14 because of "bearing down" caused by constipation. For next three years increasing trouble with constipation; bowels did not move, ten days at a time, twice. Constant pain in back of head which was practically continuous for several years. When 18 spent the winter in the country, where she was hours in the open air every day; gained flesh, but got no relief from pain. The next summer her digestion gave out completely, and since then she has never been free from various kinds of "dyspepsia." The follow-

ing winter, when 19 years old, a gynecologist performed the Alexander operation, hoping to cure her headaches. From that time she has not been able to walk more than a half mile without bringing on pain in the left groin, which sometimes lasted for weeks. When 22 she became very depressed and subject to periods of despondency. She consulted a well known Philadelphia oculist, who said all her symptoms were due to eye strain, and would be relieved by proper glasses. She had seventeen sick headaches the month she was under his care and there has been no decrease of nausea and headaches since. In 1913 she consulted another oculist, who found she needed a muscle operation, which he performed, but she has not been able to use her eyes longer at a time or with more comfort than formerly.

Digestion.—Appetite poor; can digest no sweets and no milk, olive oil, or any fats, except butter. Digests all food slowly. Has constant nausea, burning and smarting, with eructations of gas. Is carriage-sick, car-sick, or sea-sick whenever she travels.

1909 to 1911 she was constantly constipated except for one month when she had temporary relief, through use of rectal dilators, two movements a day and decrease of sick headaches. Since then the use of bran biscuits and enemas have secured small constipated movements, often associated with passage of small amount of blood. Bowels move with difficulty, whether solid or liquid; usually has to remain at stool one-half hour; mass is diameter of little finger and grooved on side.

Periods.—Irregular. Pain comes on from a week to two days before flow. Stays in bed two days. Feels generally ill; pain across abdomen and in back is intensified. Has headaches for two days, six to eight days after period. Twelfth to 18th year periods lasted six days; since then, for two days.

When she came under my care on March 8th she gave a family history which was negative, except that at 23 her mother weighed 84 pounds, the malnutrition being due to indigestion, and at 64 she had ovarian cyst weighing 30 pounds removed. Uneventful recovery.

Miss C.'s face was flushed; excitable manner. Eyes, strained appearance. Throat normal; no enlarged glands. Teeth, in general good condition; slight caries at roots of lower molars. Had abscess on gum for years. Skin, yellowish tinge; dry and shiny on arms and legs, with cracked appearance. She says it often stings and prickles all over. Nails, normal. Lungs, normal. Heart, myocarditis. Blood pressure, 150 in both arms. Hæmoglobin, 72. Mucous membrane pale. Headaches frequent, especially over left eye, and often has spots in front of eyes. Spine: pain on pressure over cervical nerves, those to stomach and pelvic

plexus; marked between shoulders and over sacro-iliac articulations. Abdomen: tenderness general, especially marked over cæcum and terminal ileum. Pain on pressure over greater curvature of stomach and sigmoid. Mass to left of umbilicus, apparently descending colon impaction. Pelvis: soreness of hip she thinks is due to having worn a surgical corset. Pain 2 inches below anterior superior spine of right ilium, close to bone. Left ovary hard, tender, and prolapsed; small cyst. Soft movable mass continuous with uterus and left adnexa, probably redundant sigmoid. Small erosion on cervis, leucorrhea. Hooded clitoris. Internal hæmorrhoids and small fissure; uninflamed redundant tissue around anus. Urinalysis: urinates often, but passed only one and one-half pints in twenty-four hours. Specific gravity, 1.018; marked trace of albumin; indican slightly increased; urea, 1.2 per cent; acetone absent; chlorides, 1.39 per cent; phosphates, 0.47 per cent; diacetic acid absent; bile absent; blood pigments absent; occasional granular casts; cylindroids absent; mucus threads, many; amorphous deposit, few urates; crystals, few oxalate; blood cells absent; leucocytes, many; epithelia, many squamous; reaction acid.

Feces analysis, normal.

Diagnosis.—Hyperacidity and prolapse of stomach; pancreatic insufficiency; possible gall bladder involvement; redundant sigmoid (or tumor) to be determined by X-ray; chronic appendicitis; internal hæmorrhoids and fissure; chronic nephritis; cyst of ovary; endometritis; general pelvic congestion; chronic auto-intoxication; neurasthenia.

X-ray of entire gastro-intestinal tract, made after taking for one week fermented milk, laxative food, glass of vichy every hour, Russian mineral oil; colon flushings; vaginal treatment for congestion, etc., etc.

X-ray of stomach and bowel by Dr. A. Judson Quimby showed hour-glass shaped stomach. Mesentery of appendix looped up small intestine. Cæcum, six to twenty-four hours after bismuth meal, distended and prolapsed, below ilio-pectineal line; ascending colon in right iliac fossa, close to ilium; constriction of entire descending colon; sigmoid redundant, filling pelvis and pressing on terminal loop of ileum which prolapsed into pelvis; rectum dilated above internal sphincter.

Operation May 8th.—Multiple adhesions around pylorus and gall bladder severed. Posterior gastro-enterostomy. (Pancreas indurated. Liver and gall bladder normal.) Jackson's veil and adhesions of descending colon severed. Small cyst removed from left ovary. Both ovaries small and sclerotic. Uterus small and in good position. Tubes normal. Very redundant sigmoid surrounding uterus and adnexa, but not adherent. Chronically inflamed appendix removed.

Operation May 26th.—Loosened hood of clitoris; removed much imbedded smegma; dilatation and curettage; five internal hæmorrhoids and fissure removed.

In view of the more urgent operations and the patient's general condition, the redundant sigmoid was not operated upon, but will be if symptoms of auto-intoxication continue. Removing the hæmorrhoids which constricted the internal sphincter will reduce the distention above this point, and the caliber of the descending colon being restored to normal will tend to gradually improve the sigmoid. Patient has had uneventful convalescence and left hospital June 10th. She is now in the country; sleeps with the foot of bed raised. Headaches have been fewer and less severe. The albumin has been reduced to a faint trace, and the casts have disappeared. She sleeps better; appetite has improved, and she is not so nervous nor apprehensive and depressed. Has no pains in arms; walks more easily; constipation has been relieved. She has no pelvic congestion. The most interesting feature of the case is that she blamed all her pelvic discomfort after the Alexander operation to fancied adhesions resulting from that; but these did not exist. The uterus was small and in perfect position. Her symptoms were due to her intestinal condition, and the redundant sigmoid accounted for pain in left groin, congestion of uterus, and adnexa, cyst of left ovary, endometritis, and leucorrhea which caused denudation around external os. The position of the cæcum explained pain in right iliac fossa below crest of ilium. The contraction of internal sphincter with the extreme dilatation of upper part of rectum caused constipation, bearing down pains, and rapid fatigue in walking. The intestinal condition, together with the hourglass stomach, accounted for slow and faulty digestion, nausea, headaches, etc. The auto-intoxication and resulting neurasthenia caused hypersensitiveness to all symptoms.

This patient had been treated by mental healers; Christian Scientists; hypnotism, psycho-analysis; had traveled for diversion and change of climate; had lavage of stomach; Salisbury and other dietetic treatments; vapor and other baths; electricity of all kinds; osteopathy; homeopathy; had consulted brain specialists and been in many sanitariums, besides being under the care of specialists already mentioned. In the face of all this, the confirmation of diagnosis by the X-ray findings was gratifying.

In closing, I would like to mention the frequency with which I have found, in neurasthenic patients giving a history of pain in left ovary and presenting symptoms of pelvic congestions, the presence of adhesions between the sigmoid and left adnexa, which, no doubt, produce pain by the pressure on fallopian tube and ovary, of gas and retained feces, and by interference with circulation. This adhesion, which may vary from

a thin membrane to dense bands, is as frequent and is more important than Jackson's veil attached to the cæcum or Lane's kink of the terminal ileum.

The relation of neurasthenia to gynecology, due to the combination of symptoms cited in above cases, led me to devise an instrument, which I hope you may find useful as an abdominal wall lifter. It enables the surgeon, through the small incision used in the average gynecological operation, to evenly lift the abdominal wall, and, keeping the hand well out of the way, to gradually turn the speculum, and by the electric light in the end of the illuminated instrument, or, by the light reflected from head mirror along the blade of plain speculum, to inspect the cæcum, appendix, ascending colon, hepatic flexure, gall bladder, transverse colon, stomach, splenic flexure, descending colon, sigmoid, and various portions of the ileum, without handling. Any lesions of the gall bladder or constricting bands may then be corrected under the present anesthesia, ptosis may be noted for correction by raising the foot of the bed or other postural treatment during convalescence, thus avoiding complications which often have more effect on efficiency than the gynecological conditions themselves, as the latter may, in many instances, be considered secondary.

Dr. S. M. Crowell, Charlotte: This is one of the most interesting papers that I have listened to in many a day. I see Dr. Ashby, of the chair of gynecology of the University of Maryland, here, and I would request a discussion of this paper by Dr. Ashby.

Dr. T. A. Ashby, Baltimore, Md.: It gives me great pleasure, Mr. Chairman, to open the discussion on Dr. Morton's paper.

I congratulate the Medical Society of North Carolina upon having present on this occasion such an intelligent and cultivated member of our profession of the female sex. I feel much embarrassed in trying to discuss a paper that has been so well and fully presented. Dr. Morton has so completely covered the ground that I feel that I cannot add anything to it. She has shown us that a woman can attain the highest position in science and still not lose her womanly grace and loveliness.

The Woman's Medical College of Baltimore was founded in 1882 and was the first medical school for women in the South. For many years I taught in that institution, and we had quite a number of women as students. They were women of high type and splendid character, and made great success in the medical profession. As time progressed the Johns Hopkins University became a coeducational institution in its medical department, and we transferred this work to Hopkins. I know that many of our graduates made great success.

We all know very well that Dr. Morton is from a Southern State. She has not transferred her allegience to the home of her adoption in the North, because she still retains all the manners and characteristics of our Southern women.

Now, in the discussion of this subject, I can say very little that has not been better said by Dr. Morton. I have had comparatively little experience with neurasthenia, except in a few gynecological cases. My experience covers a point of view slightly different from that of Dr. Morton.

I think that all our alienists will tell us that many mental ailments are largely due to toxæmias and toxic conditions having their origin in the alimentary canal. Now, neurasthenia may be classed as a mental disturbance of some kind, or some disturbance of the nerve centers. From a gynecological point of view, I have found that neurasthenia is almost always associated with disturbances of circulation, which frequently cause general systemic as well as nervous disturbances. But apart from circulatory conditions affecting the pelvic organs, lacerations about the cervix, chronic inflammation of the tubes, and more especially of the ovaries, growths in the pelvic organs, such as fibroids and ovarian tumors, may, by reflex action, bring about functional disturbances of the nerve centers and the most pronounced forms of neurasthenia. Fortunately for us, in many instances by the correction of the local condition the reflex disturbance will disappear. Those who have had much experience with lacerations of the cervix will recognize the correctness of this statement. I have operated many times in the past for local lesions which caused much reflex irritation, such as neuralgia of the suboccipital and frontal region, gastric disturbances, melancholia, and general lowering of bodily and mental health, all of which have frequently disappeared by the correction of the local lesion. I have observed a form of neurasthenia found almost entirely in women who have chronic inflammation of the ovaries. These women are almost invariably single, who have attained the age of 35 to 40, and have suffered more or less from disturbances of menstruation, especially dysmenorrhea. They are of delicate physical build and of high nervous organization, women who are easily excited and who develop symptoms of melancholia. I have removed the ovaries in a few of these cases where the local conditions warranted an operation, and have observed a pronounced improvement in the neurasthenic symptoms after the oophorectomy. Now, I do not believe that this operation is indicated in all cases, and should be confined to that class who have about reached the climacteric, if done at all for the neurasthenic condition. We touch on dangerous ground when we attempt to correct nervous conditions through surgical methods, for we

cannot always be sure when we are dealing with reflex or with organic changes. I do think, however, that local conditions about the pelvic organs in women are often responsible for reflex symptoms, and should be corrected, because they are sources of local distress and promote many forms of invalidism.

Many women are very introspective, and when told of the presence of fibroid or ovarian or of other local conditions, they worry over troubles, exaggerate their symptoms, and often develop neurasthenic disturbances. Nothing short of the removal of the local trouble will improve the mental condition.

There are other forms of pelvic trouble which may give rise to neurasthenia or are simply associated with it. In the treatment of such conditions the surgeon and neurologist may be of mutual assistance and clear the way for an intelligent line of action. Dr. Morton has given us a very instructive study of that form of neurasthenia due to the mechanical disturbances of the intestinal canal, causing stasis and toxic conditions. There is a large field for study and investigation along these lines, and I congratulate Dr. Morton upon the very exhaustive and clear study she has made and upon the intelligent way in which she has presented her subject. I have not only been greatly profited, but intensely interested, in what she has said.

UTERINE CURETTEMENT.

R. L. Payne, Sr., M.D., F.A.C.S., Norfolk, Va.

Mr. President and Gentlemen:

I feel that I owe an apology to the special section on surgery for reading a paper of just this character. I confess I thought I would read this paper to the general practitioner and not the skilled surgeon, and therefore I offer you apologies in the beginning for such an elementary paper.

On such occasions as this it is usual to present papers detailing rare conditions or presenting for consideration unusual and difficult procedures or, not infrequently, the speaker goes into labor and gives birth to premature and half-baked theories. Departing from custom, then, let me ask your attention to a well known method which should demand your interest, not only because it is sometimes of much use, but especially because its use is ofttimes much abused and fraught with disaster.

By the profession at large curettement of the uterus is regarded not only as the simplest but also the safest of all surgical procedures, and many a doctor who would not dare amputate a finger does not hesitate to bring a woman to the edge of the bed and, without anesthesia and almost nothing of antiseptic precaution, proceed to scrape out the uterus secundum artem.

The indications for the operation are too often regarded as unlimited —uterine hemorrhage, regardless of cause; any variety of acute or chronic uterine discharge; any case of dysmenorrhœa or amenorrhœa; septic conditions of the uterus following parturition; sometimes for causes imaginary, without rhyme or reason the womb is curetted, and (I would not have you regard me as a "calamity howler" when I say) the last state of the woman is too frequently worse than the first. In my own experience it is not infrequent that patients coming to operation for pelvic lesions have had their causal symptoms in an all-advised or ill-conducted curettage.

Let us, then, call this operation into account. We must recall, first, that the womb is, perhaps of all the organs in the body, the most easily infected. Rich in blood supply and abounding in lymphatics, the uterine mucosa has been spoken of as "an open lymphatic gland," or we may regard it as a lymphatic surface interspersed with blood vessels, the lymphatics being not mere vessels, but great spaces lying between bundles of connective tissue and communicating freely with the dense network of lymphatic vessels which enmesh the muscularis. So it appears no organ in the body may more readily take on infection, and from no other does infection more easily spread.

Let us consider the conditions in which curettage of the womb is indicated; the conditions in which it is often used, but is strongly contraindicated, and finally the dangers inherent in its use.

INDICATIONS FOR CURETTEMENT.

1. In hemorrhage from the womb due to incomplete abortion, if the organ be too small to permit the introduction of gloved fingers.

2. Curettage is indicated in hemorrhage due to polypoid conditions of the endometrium and in the so-called hypertrophic condition of the uterine mucosa.

3. Curettage is indicated in certain cases of fibromyoma of the uterus in an effort to arrest hemorrhage temporarily and permit the patient to recover somewhat from the anemia before hysterectomy is done.

4. The curette may be used to remove pieces of tissue from the body of the uterus for purposes of diagnosis in cases of suspected cancer; but

in such cases the microscopic examination of the tissue should be made at once, in frozen section, and if malignancy be found, radical operation must be done immediately.

5. Curettage is indicated to remove cancerous tissue, preceding the use of the cautery, in carcinomatous uteri when the disease is too far advanced to admit of hysterectomy.

CONTRAINDICATIONS FOR CURETTEMENT.

1. Curettage is useless and therefore contraindicated in uterine hemorrhage due to any of the numerous systemic causes.

2. Curettement is dangerous and therefore contraindicated in hemorrhage due to pelvic peritonitis, or inflammation of the adnexæ. In pelvic abscess or ectopic pregnancy, unless it is to be followed at once by appropriate operation for the existing condition.

3. Curettement can do no good and is contraindicated in hemorrhage due to congestion from displacement of the womb.

4. Curettement is capable of doing little good and great harm in cases of submucous fibroid.

5. Curettement is a highly dangerous operation in septic conditions of the uterus such as is due to tents, gonorrhœa, and the infections of the puerperium.

6. Curettement is rarely of use in the more or less doubtful operation of dilatation of the cervix for dysmenorrhœa. A very large number of surgeons seem to think it necessary to curette in all these operations, but this is usually unnecessary and frequently disastrous.

It would seem, then, that uterine curettement has a distinctly limited use.

It is curative in only three conditions of uterine hemorrhage and palliative in one other.

It is palliative in cases of advanced cancer if followed immediately by thorough, prolonged desiccation of the tissues by the cautery, and it is possibly of some diagnostic use in early cancer of the body of the uterus; but of this matter we will speak later.

It is capable of doing no good in at least a dozen other conditions giving rise to the symptom hemorrhage and is positively dangerous in many of these as well as in all septic conditions of the endometrium.

One word as to the dangers of the operation: No man should do the uterine curettage unless he is trained to do good surgery, for although he may not know immediately the harm he has done, there is no operation in which imperfect technique more surely breeds a train of evils.

In a consultation not long ago with a surgeon of some repute, he remarked: "The patient had some temperature, as they always do after a curettage." And thereby hangs a tale.

The most rigid asepsis that is possible should obtain, and no patient should be curetted who is not under the control of anesthesia. The mouth of the womb must always be freely and fully dilated, for with an operation so generally imperfectly done the freest possible drainage must be provided. When we recall how admirably the uterus is constituted to take on infection, and then remember that the operation is done without the aid of the eye; scraping blindly in a closed sac; never completely removing the mucous membrane, but leaving raw surfaces interspersed with islands of infected mucosa, one can readily understand how the operation is full of danger under the best conditions and in the most skilled hands. There is no man whose touch is so delicate that without the aid of the eye he can tell when he has scraped away infected tissue, and the risk of curetting the various infections of the uterus is so grave that the operation has no place in their treatment; and this is especially true in the infections of the puerperium. Such cases too frequently end in disaster, and to curette a streptococcus infection is so nearly always fatal that it might well be classed as manslaughter; and yet I have been told that men do curettements in their offices without anesthesia and without any dilatations of the cervix worthy of the name, and then allow these patients to travel long distances to their homes. I have known physicians to do this operation in the homes of the patients without assistance and almost without pretense of cleanliness.

The use of the curette in the hemorrhage from submucous fibroids is bad, because in a considerable percentage of these cases grave infection is apt to follow. I have said that in the early history of cancer of the body of the uterus the curette may be of use in establishing the diagnosis, but even this is open to question. There may be an area of infection which we entirely miss in our scrapings, and so we are lulled into false security, and certainly the curette is an invitation to new danger in these cases unless we are prepared for an immediate microscopic examination, and, if the suspicion of cancer be confirmed, immediate hysterectomy, for it is a very hazardous thing to open up an area of cancerous infection and leave it *in situ* even for a few hours. No one can know how quickly under such circumstances the infection may be carried to other tissues.

Finally, in view of the fact that the operation must be done beyond the ken of the eye, it must be done with the greatest gentleness.

The unskilled man who must operate should never use anything but the dull curette. In fact, in the majority of cases no one need use any-

thing but the dull curette, and in the few conditions that require the sharp instrument the cutting edge should be set slanting inwards rather than straight up and down, as so often used.

It is no infrequent occurrence that the uterus is punctured by the curette, carrying infection into the peritoneum, and while this is not necessarily fatal, the accident calls for immediate laparotomy to repair the injury.

Many times the unskilled operator, thinking he was scraping away diseased tissue, has broken so large a hole through the body of the organ that loops of intestine have presented at the os, and in some instances the injury has been so extensive that resection of the bowel was necessary. This danger is especially great in the softened uterus of the puerperal state, and I have known the accident occur not infrequently in other conditions of the uterus.

Pardon me if I seem to have consumed your time with a well-worn subject. My plea is for conservatism, recognizing the great dangers which surround an operation too often considered so safe that it may be recklessly done; too often attempted without the requisite skill and more often done for conditions in which it cannot possibly do good, but may cripple or kill the poor woman who puts her trust in the doctor.

CANCER OF THE UTERUS.

E. T. Dickinson, M.D., Wilson, N. C.

The American Society for the Control of Cancer is instituting a campaign in this State and will seek to annihilate or greatly minimize the mortality of a disease second to none except perhaps that of the great white plague. The public will be enlightened and aroused to the proper sense of precaution by literature sent by this society into the numerous homes of this great State. The physicians will be relieved of this burden and embarrassment. But it will be of the utmost importance that every practicing physician in the State prepare himself especially to meet the new demands the public will make of the profession on this account.

A dissertation on cancer of the uterus is beyond the scope of this paper. A short discussion of the phases that will enable each practitioner to meet, in a creditable way, in his office, these demands will be the principal aim.

It will be necessary to at least give every woman complaining of pelvic trouble the advantage of a careful pelvic examination, with a view always

to the possibility of cancer. By means of habitual and studious practice, differentiation including or excluding cancer, as the case may be, becomes not very difficult.

About one-fourth of all carcinomas occurring in women are in the uterus, and nine-tenths of these are in the cervix. Some estimates indicate that one woman in every ten over forty years of age suffers with this disease of the uterus. However, this estimate seems too high to one in a rural community, and it may be only the proportion in hospital communities where the more severe diseases congregate.

In the light of our present knowledge, irritation is the chief cause of cancer. In the womb it is inflammation resulting from irritating discharges and the attendant disturbed circulation, which tends further to increase the discharge. Other causes of continuous or repeated irritation are less frequent, and therefore of less importance.

The usual site of origin of carcinoma of the cervix is perhaps the junction of the squamous and columnar epithelium, which is usually at the narrowest part of the external os. It is in the cervix that Conheim's theory of neoplasms meets its chief support, *i. e.*, that carcinoma is apt to occur where two types of epithelium join.

Cullen divides carcinoma of the uterus into three stages: (1) Before there is loss of tissue; (2) Where there is moderate loss of tissue; and (3) Where there is extensive or complete degeneration of the cervix. As the extent of loss of tissue does not always correspond to the clinical stage of the disease, I would suggest as a working basis a fourth class, regarding involvement of periuterine tissues and organs and the fixidity of the uterus. With this scheme in mind, the surgeon will often be able to reach a practical conclusion as to the advisability and kind of operative treatment indicated for each case.

Before there is loss of tissue the mass is ill-defined. It may be detected by the palpitating finger when the nodules are but a few millimeters in diameter, or the tumor may be larger, with small nodules projecting above the surface. Early these are distinctly confined to one quadrant of the cervix, and not around its entire circumference. These invasions or elevations increase in number until a decided tumor projects into the vagina or until the entire cervix is invaded. Extensive involvement of the cervix is possible while the growth is still confined to the cervix. But, unfortunately, the reverse is more often true, and small invasions of the cervix are accompanied by decided involvement beyond.

Extension is by way of the lymphatics and the connective tissue spaces. But columns of cells sometimes extend laterally from the cervix, and from secondary nodules in the immediate vicinity of the primary tumor. The

invasion of the surrounding organs is by gradual extension, and this stage is simply an extension of previous stages. But the entire pelvis may become filled with a carcinomatous mass before the original lesion becomes manifest. Extension by metastasis is less frequent than was once believed. It is now determined that in less than one-half of women dead from carcinoma is there lymphatic metastasis.

The first evidence of carcinoma of the uterus is disturbance of function and abnormal discharge, either serous or bloody. Because of the insensitive region diseased, the development of pain is always late. It cannot be too strongly urged that any pelvic disturbance, particularly when it appears in women near the menopause after some years of sterility, is a sign of disease the character of which should be definitely and soon determined. A discharge which appears after the menopause must be regarded as presumptive evidence of malignancy until disproved by examination. Discharge and not hemorrhage is the watchword. From the very nature of the carcinomatous process hemorrhage cannot be a very early symptom, because it must be preceded by some loss of substance, unless it applies to those parts of the uterus concerned in the menstrual flow. Hemorrhage in its incipiency is not likely to be properly interpreted unless it occurs after a period of menopausal amenorrhea.

Pain and fetor are late manifestations, and will soon have no place in diagnosis. Likewise, the symptoms due to involvement of neighboring organs which usually bring the patient before the physician for advice must be substituted for any abnormality of function or any discharge, whether it be sanguinous or not.

If suspicion of cancer presents itself to the surgeon or the physician, and leads him to make an examination, it is only in the rarest cases that he has any considerable difficulty in either confirming or disproving his suspicions. A nodule, a cauliflower mass, or a crater may be present, but there is always the same dense feel and, on inspection, the same appearance of a granular surface.

As sections taken from the tumor previous to operation increase the liability to metastasis, it is not considered admissible to subject the patient to this additional risk. Where material is accessible, one can check up his examinations with remarkable satisfaction by making frozen sections and staining in one of the simple ways. This requires but little time and gives the most satisfactory results possible to a general practitioner.

With these outlines leading to a clear view of the necessity of early treatment and, therefore, the most favorable possible prognosis, it would seem the principal object of this paper is met.

Early, very early, treatment by complete eradication is recognized by all in position to judge. Early, very early, eradication by excision is recognized as the best method in present use.

Later than the early stage auxiliary methods may be brought into valuable use. Among those most recently adopted are radium and the rather new principle involved in the Percy Cautery. These have evidently not yet reached their perfected stage.

As every case is to be carefully studied and assigned to its fitted operation and operator, further discussion will not be considered here.

Dr. W. P. Whittington, Asheville: It is a fact that we sometimes enter the domain of the pelvic organs too carelessly. A great many of our younger physicians go out and begin to think that they can do capital or major surgery, and major gynecological work, and do it irrespective of the proper consideration of the life and welfare of patients that come under their care. I know it to be a fact that the result of this reckless practice of curetting the uterus for all and every kind of condition is the direct cause of infection not only of the uterus, but of the fallopian tubes and peritoneal cavity, which infection is the cause of the loss of life in many instances. So, as Dr. Payne has properly said, this is an operation that should only be done under strict surgical methods, or in the best conducted and equipped hospitals. There are some times when a private home properly prepared and with the assistance of a competent nurse may be used for emergency operations, as curettage, but certainly not indiscriminately, as is too often done by our young practitioners who have aspirations to surgical reputation. Therefore, I want to impress emphatically that a great deal more care and precaution should be taken in treating these cases.

Dr. Payne (closing discussion): I don't know that there is anything I can add to what I said in my paper. I don't want the idea to take hold of this body that I said a young man could not curette the uterus as well as an old man. The young man is often better fitted to do it, because he has had better training. The last really serious thing I have seen happen in the operation under consideration was the death of a woman who was curetted for abortion by a practitioner of twenty years experience. The operation was done on the patient's bed without anesthesia and without assistance. She promptly developed sepsis and lived only a few hours after reaching the hospital.

The point that I wished to make especially was that curettement was done too frequently and for reasons where it could not possibly do any good whatever. It's almost a practice in the profession to curette

for hemorrhage from the uterus, and what I attempted to show was that of all the different causes of hemorrhage there are only three that could really be benefited by curettement. With all other conditions the operation would be useless and might be dangerous. We do too much curetting, too carelessly, and with too imperfect technique. We kill some women, and those we don't kill we may cripple.

Dr. W. P. Whittington, Asheville: I spoke more of lack of experience than of worth. There are many young men who are more competent than older ones.

Dr. Dickinson: The object of my paper was simply to call the attention of the profession to the new demands that will be made soon on account of the campaign that will be made against cancer, and this object was to assure every one that it will be necessary to make a diagnosis of early cancer, and to raise the ambition of the profession to that extent—to make diagnosis, the office work—was the object of this paper, and no treatment was intended to be brought out. Dr. Graham did not get in to hear my paper. He asked that the Percy Cautery be dilated upon to some extent. But I would prefer to say nothing about the Percy Cautery in this connection.

PEDIATRICS.

THREE NEEDS OF A CHILD.

Dr. L. W. Elias, Asheville.

This is no discussion of air, food, and water, nor of hygiene in any of its usually accepted terms. These are needs, and very fundamental ones. But the war against tuberculosis and the consequent awakening to better hygienic conditions, together with the crusade against impure milk and other like popular sanitary campaigns, have educated the public to a standard far in advance of anything that it has known before.

The improvement attained is well illustrated in the New York City death rate among infants:

In 1888 288 babies per 1,000 died in the first year.

In 1902 168 babies per 1,000 died in the first year.

Last year only 95 babies per 1,000 died, which shows that the animal necessities are being fairly and increasingly well met.

What I wish briefly to call your attention to are the intellectual and moral needs of a child.

No child can ask for—though every child by Divine right is entitled to—intelligent parents. Healthy they should be, but even more necessary is intelligence. In using the phrase, "intelligent parents," let the emphasis be put on the word "parents." This means not simply an intelligent man and woman who are the father and mother of a child. We all know of men and women who are intellectually and by training far above the average, yet who are woefully ignorant and striking failures as parents.

But the plea is for intelligent parents, awake to the needs of a child—their child, if you please—and conversant with the accumulated knowledge regarding the rights and best interests of children. And this demand does not seem excessive. The State will not license, nor would we employ, a lawyer or doctor unless he had given years of study to the branches in which he was to practice. Preachers and teachers must prepare themselves in order to do their work. We would not even let a man rent a farm or care for high-grade cattle who had no experience. We expect the modern farmer or poultryman to study the Government reports and take journals devoted to his work. Special training, and keeping

abreast of the accumulating knowledge in one's particular line, are considered necessary for even ordinary efficiency, according to our modern way of thinking.

But how is it when we come to parents? No special training is required to pass the examination and obtain license to marry, and probably raise a family of human souls to help make or mar the State. Where so much training is needed, on account of the great issues at stake, and where so much helpful knowledge has been gathered and made available, it is inexcusable that a foolish young girl and boy may marry, with the State's full sanction, and start in to help raise citizens for the future control of the Commonwealth. With such lack of preparation, can we wonder at the frequent poor results? Is it surprising that we occasionally find one of the lower animals better behaved, more self-contained, apparently enjoying life more fully, and adding more to the real work of the world than some of these unfortunately reared humans? And this is so—at least, in large part—because we demand better trainers for the animals than for the humans.

If some one says that these contentions are unfair and extreme, I will simply appeal to your own observations of conditions, and ask if it is making too severe a demand upon parents to require that they be at least as well prepared to intelligently rear and train the little human animal as we expect those to be who care for our high-class beasts of burden?

Who has not seen the child lacking in self-control, in respect and obedience, lacking in training to a helpful occupation, growing up to be a more or less vicious parasite upon his kind? And this largely for lack of intelligent handling. His parents may be, and often are, reputable and worthy citizens; but as they came by their own character in a hit or miss fashion, they are unable to tell any one else the essential paths by which he may achieve the same. This is unfortunate and unnecessary.

It is not asking too much if we require parents to avail themselves of some of the fundamental facts regarding the proper rearing of those who are, both their children, and the State's potential citizens.

A parent should be able to train his child to take the hard things in life gracefully, rather than to sulk and chafe at them; to get the full joy out of living, avoiding useless worry over the unavoidable; should teach him self-control, and respect for authority, age, and experience; should teach him a trade or occupation; and should teach him that he has a part in the world's work, and teach him how to fill it.

Again I reiterate: A child needs intelligent parents.

The second need of a child would soon follow, if the first were supplied, namely, an intelligent public opinion or attitude towards children.

The almost universal feeling regarding a child is that it is a sort of human toy. To women it is a doll to be admired and played with; to men it is a foolish little thing to poke fun at and tease. The average intercourse with a child is one of banter, at the child's expense, without his being exactly aware of or able to parry it, or it is teasing and annoying him. I believe a little thought will convince one that this is true. Can we wonder at Young America, pert and self-assertive, without respect for his elders, their advice or their good intentions? Who would allow a blooded colt to be teased and worried as we treat children? This attitude can certainly be improved. There is common ground on which the child and adult may meet without unduly elevating the one or lowering the other, and the intercourse at this point is mutually helpful. As a Public we can vastly improve our dealings with children.

In the third place, the child needs, and has a Divine right to, what must come first, namely, a medical profession intelligent and conversant with the essentials of child life, able and anxious to direct and train the parents and the public regarding these matters; willing to lead crusades in behalf of these things; constantly pressing the education along the lines indicated, until it has advanced at least to a level with the physical attainments. The time is ripe and it behooves us to realize that this work must begin with the doctors and we must make ourselves the intelligent physicians that the child-life of the State demands.

TUBERCULOSIS—A DISEASE OF CHILDHOOD.

THOMPSON FRAZER, M.D., ASHEVILLE.

The last decade has seen so many contributions to our knowledge of tuberculosis that we have been obliged to give up opinions which we had cherished for years. It has not been so very long since text-books dismissed the subject of tuberculosis in children with a few words, to the effect that this disease was limited chiefly to the bones and joints and was seldom met with in the chest during childhood.

The advances made in pediatrics during the present century have shown us that we have long underestimated the importance of tuberculosis in children as well as its relation to tuberculosis in later life. It was von Behring who, several years ago, advanced the idea that tuberculosis in adult life, instead of being an acute disease, was usually due to an infection which had existed years previous to the outbreak of symp-

toms. According to von Behring, infection dated from the first year of life, and was traceable to the milk of tuberculous cows. The frequency with which tuberculosis of the abdominal glands was met with in autopsies seemed to lend support to his contention, and part of his theory has been retained, viz., that of infection in childhood and its relation to disease in later life; but the idea that infection is chiefly due to milk of tuberculous cows, and is acquired during the first year of life, has been abandoned in favor of the view that infection takes place at a somewhat later age and more commonly through the respiratory tract.

That primary infection through the intestinal canal has been much overestimated is, I think, clearly shown by the more recent observations. Thus the studies of Wollstein and Bartlett, based on several hundred autopsies on tuberculous children, have brought out the fact that the bronchial glands were far more often involved than the abdominal glands, and that the lesions in the former were the most advanced. Moreover, in the majority of cases the point of entry of the bacillus could be demonstrated in a lesion of the lung itself. In those few cases in which no lung lesion was discoverable, but in which the bronchial glands were enlarged, it would seem as if the bacillus had passed through the lung without localizing there. The opinions of these authors that primary infection of the lung takes place in the great majority of cases is in accord with the view of von Pirquet, who estimates that in 95% the infection takes place through inhalation. Although infection by the abdominal route is placed at from 10% to 25% by various writers, there is a tendency at present to look upon the lungs as the chief portal of infection.

Thus, we have radically changed our views as to how and when infection takes place; we have learned that infection becomes more common the older the child, so that by the time the age of puberty is reached a great number harbor in their glands a focus of infection. It is true that infection does not mean disease. Of the large number infected only a few will develop symptoms of tuberculosis; indeed, it is thought that these early infections confer a certain amount of resistance or immunity against further infection. The infected individual occupies a curious position: protected to some extent against renewed infection and yet carrying about with him a possible source of future disease. We look upon tuberculosis not as a disease of an acute nature, but as one in which infection may have been present for years, but latent, not causing symptoms; the infection dating, perhaps (in the majority of cases), from childhood and having been acquired in the intimate contact of family life.

It has taken us some time to accept the idea that tuberculosis is a chronic infection; we have also been slow in ridding ourselves of the

notion that tuberculosis (except of bones and superficial glands) is uncommon in childhood. It has been only during the last few years that attention has been focused on the chest of the child; as the results of recent studies, however, the conclusion has been forced upon us that the disease is not always latent during childhood; that is, if symptoms are sought they will often be found to be present. In other words, tuberculosis is not simply a childhood infection, but a real *children's disease.*

It is my purpose briefly to review the main diagnostic points upon which the recognition of the disease depends. I shall not attempt a description of tuberculosis during infancy, at which period of life it is so generally fatal, nor discuss the symptoms of general miliary tuberculosis or the bronchopneumonic form of the disease. I shall confine myself to a consideration of disease of the bronchial glands, or, as it is more properly called, "Hilus Tuberculosis."

It is impossible to go into every detail in this brief paper; we must be content with a discussion of the signs and symptoms which should be suggestive to every physician in general practice, for it is he, chiefly, on whom the diagnosis will rest. And I would emphasize what I believe to be a fact, and that is that at present the history and the symptoms which are met with in this condition are as important, if not more important, than the physical signs, although the examination of the chest often furnishes evidence which can be obtained in no other manner.

It is difficult often to make a diagnosis of tuberculous tracheo-bronchial glands in children, for several reasons: We are deprived to a great extent of the assistance of the subjective symptoms; again, because of their insidious onset, symptoms which should be suggestive of bronchial adenopathy are readily overlooked; because of their varied and vague character individual symptoms are dismissed as of no moment, although their value in the aggregate might be considerable.

It should scarcely be necessary to dwell on the importance of the history of exposure to infection, and yet this is a point that is too often passed over hurriedly. We must bear in mind also the importance of attacks of measles, whooping-cough, and grippe, and the nature of the convalescence from these diseases. Quite often convalescence is delayed; as the mother says: "My child has never been well since the measles (or whooping-cough)," and this may date back several years. The gradual onset of symptoms makes it difficult or impossible to fix any month or even year as the beginning of the child's ill-health; usually, however, the parent does not seek advice until the child has been in ill-health for some time.

In the beginning especially, the symptoms may be very indefinite. Among the most important of the constitutional symptoms is a loss of weight, or what is more apt to escape notice, a stationary weight—the child doesn't gain as it should. It has been pointed out how valuable a regular weighing of children would prove, since every healthy child should gain weight steadily. If weight is lost, or is not gained, the child is sick, and the cause should be sought for at once.

In addition to the stationary weight, the appearance of the child should be noted; while it may appear robust, quite often it is delicate and frail-looking. Pallor of the face and mucous membranes is another symptom which appears so gradually that it is not noted until it has existed some time. With the loss in weight there is apt to be a corresponding loss in strength; the child shows evidence of malnutrition, is languid and fretful, doesn't take the interest in things that other children show. The appetite is poor or variable; there may be minor digestive disturbances.

The presence of a slight rise of temperature may be detected if systematic observations are taken, although this symptom is not of the same importance as it is in the adult. Indeed, it is claimed by some that a temperature of 100 degrees F. in a child between five and nine does not constitute fever. Just what limits are normal at the different periods of childhood is not agreed upon; so that a temperature record, though valuable, is not of the same diagnostic import as it is in the adult.

Of subjective symptoms, pain may be complained of if the child is old enough. This may be referred vaguely to the chest or may take the form of a backache in the interscapular region.

A most important symptom is *cough*, although there is no particular type of cough that may be said to characterize tubercular glands. It may be present months or years, moderate or severe; it may be intermittent in character and readily be overlooked. In younger children it may be spasmodic, resembling that of whooping-cough; in older children it is apt to be dry and unproductive. As a rule, sputum is not present or is difficult to obtain. If, however, bacilli should be found in it, or expectoration of blood noted, the significance would be great.

A word must be said about enlarged cervical glands. At one time there was a tendency to regard them as evidence of tubercular inflammation if they were distinctly palpable. It has been claimed by recent authors that childhood is the age of lymphoid activity, and that palpable lymph-glands are not the exception, but the rule. Landis and Kaufmann[1] have said: "In our experience all of the superficial lymph-nodes can be palpated readily in the majority of cases if the children are systematically

examined from this standpoint." So that unless a single large node is found, or several are matted together, the significance of these palpable glands is not as great as we once thought. Riviere[2] is of the opinion that the enlargement of a particular group—the supraclavicular—reaches an importance not attained by others, as they have been shown to be in direct communication with the tracheo-bronchial glands.

Before passing to a consideration of the physical signs, I would say that the employment of the skin test of von Pirquet has a decided value, in my opinion, especially in younger children. While absolute reliance is not to be placed on it, as confirmatory or suggestive I believe it valuable.[3]

Although much has been written in late years on the physical signs accompanying tuberculous tracheo-bronchial glands, it will be found that the examination of the chest in children is often very unsatisfactory and that a diagnosis of tuberculous glands is arrived at with great difficulty, if at all, despite the fact that there may be symptoms which point to disease of these glands. Thus, in the early stages of gland tuberculosis there may be no physical signs, though the disease is active. On the other hand, conduction of the breath and voice sounds is much greater in children than in adults, and is apt to be misleading; while niceties of percussion can scarcely be obtained in children who are constantly moving about; the smallness of the areas to be examined adds to the difficulty. "If care is not taken to see that the child sits straight, and that one or the other side is not held tense, not only will there be very faint or nearly absent breath sounds on the cramped side, but in addition the percussion note may be impaired, or indeed absolutely dull."[4]

It is not surprising that different observers have disagreed as to the physical findings. There are some signs, however, which while not absolutely diagnostic, are suggestive, especially when taken in conjunction with the symptoms. The occurrence of glands in the neck has been referred to. One should also note whether dilated veins are to be seen on the chest: these, and a full jugular which does not empty completely on deep inspiration, are suggestive of glandular pressure. Diminished expansion at one apex is of less value in children, especially younger ones. In older children if a deep breath is taken and held, there may often be seen the so-called "hilus dimple," anteriorly, in the inner part of the upper two interspaces.

Tenderness[4] over the sternoclavicular junction and over the vertebral spines is described by many. I have not met with it.

Less stress is laid now than formerly on the area of vertebral and paravertebral dullness extending between first and fifth dorsal spines, and on

the semilunar areas in the two upper interspaces anteriorly as these have been shown to be present in healthy children. The most constant sign on percussion is a slight dullness, most commonly found in the interscapular region. Dullness in front is not so commonly found. To detect slight areas of dullness in children it is important that light percussion be practiced, especially the "tapping percussion."

It is often difficult to interpret the voice and breath sounds in children because of the thin chests. In the interscapular region, bronchovesicular breathing and well-marked vocal resonance, especially on the right, may be detected, even in health. Auscultation of the whispered voice directly over the vertebra as described by d'Espine often gives valuable evidence. In cases of enlargement of the bronchial glands the tracheal quality normally heard over the cervical spines may be continued down the dorsal spines a variable distance. It must be remembered, however, that the bifurcation of the trachea occupies a relatively lower position in the chest as the child grows older, so that this sign is not to be considered abnormal unless heard below the level of the first or second dorsal spine in a child of eight, or below the third or fourth in a child of twelve. Fine râles about the nipple are found in a considerable number of cases.

From what has been said it is apparent that although none of the physical signs are absolute in their significance, the presence of dilated veins, of interscapular dullness, and of whispered pectoriloquy beyond normal limits should make one suspicious of the existence of tuberculous bronchial glands. The suspicion is strengthened if in addition the child exhibits any or all of the symptoms noted, especially cough, loss of weight and of vigor.

While I realize that in this paper I have only touched the fringe of a very large subject, it is hoped that the points I have attempted to bring out may serve to further the diagnosis of tuberculosis in children, to the end that proper steps may be taken to prevent the development of more manifest tuberculosis in later years.

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SOME OF THE MOST IMPORTANT POINTS IN THE MANAGEMENT OF INFANTS THE FIRST SIX MONTHS.

Dr. I. W. Faison, Charlotte.

It is with fear and trepidation that I commence to talk to you this afternoon about the subject that I have selected, "Important Points in the First Six Months of Infant Life." Now, it does not seem that I should have to be ushered in with that kind of feeling, but when I realize the importance of this subject, when I realize what I am to talk about, the responsibility in a case of this sort is more than I really feel like taking.

A baby is just flung out from the tips of the fingers of the Creator into the hands of a cold world—a baby that is almost 98 per cent out of a hundred handed over to us perfect, with everything made perfect by the Creator, who does all things absolutely well. A baby has not the instinct to take care of itself. A calf will reach out to its mother and take its food, but this poor little baby will lie by its mother and starve and die without help.

When you are dealing with babies you are not dealing with adults, and it has been my experience that medical men look upon babies as little adults. They are not little adults, either in anatomy, pathology, or physiology. If they grow up and changes come and we handle them as we should, they become adults; and the great Creator, from the foundation of the world, intended that these children should grow up to be perfect men and women. Are they? No, they are not; and why? Because the people who have charge of them and the medical men who have charge of them are not prepared to care for them and let them run the race set before them as they should. That responsibility laid on me makes me come here to talk to you today about these little fellows.

The four principal things that I want to talk to you about in connection with babies are temperature, hygiene, food, and infection. If you, gentlemen of the Medical Society, will train your people and educate your people, first educating yourselves to the point of knowing how to take care of these principles, then you will come nearer carrying out the will of the Creator, who sent the babies here.

Now, as to temperature, it is absolutely important to know something about the temperature. When the baby is born, it is born at the temperature of 98½ to 99 degrees. In a great many places in which they are born they are dropped down in a temperature of from 40 to 45 degrees,

with no resisting power at all, absolutely at the mercy of the people present, educated or ignorant, as the case may be. It is true that the doctors do not see all of these cases, but it is a fact that they do see a great many cases in which they do not do their duty as doctors. In a great many hospitals, even, they go wrong, not from too low a temperature, but from too high a temperature by artificial heat. I have been in a hospital and seen the temperature of children two hours old go to 110. To keep them alive they should be kept at a temperature of from 98 to 100. The child at a temperature of 100 does better than a child at 97. The temperature should be kept there until the child is 2 years old. The baby can get sick even on good feeding by allowing his temperature to go too high. Therefore, in the summer a baby should be clad lightly, that his temperature may be kept in the neighborhood of 100 and below.

The hygiene of the baby commences the moment the baby is born and the cord severed. The cord is cut, and the baby is taken away from the mother, to live or die as he may be able. And if he is not cared for properly then, he will go wrong, and a great many babies get wrong that never get right, or some surgical operation has to be performed on them, because of the fact that they went wrong within two hours after birth. When the cord is severed, the baby should be taken care of then, and not thrown aside in order to take care of the mother. She is better able to take care of herself than the baby is. Some obstetricians take care of the mother to the neglect of the baby. The baby should be taken into a warm room and anointed with oil, and cleaned. The eyes should be cleaned out and nitrate of silver put in each eye, as a precaution against infection, which is likely in the hovel or in the palace. Gonorrheal infection is no respecter of persons. There are plenty of persons going about today with one white eye that could have been prevented if, when the person was born, the eyes had been treated correctly. When you have an eye that shows gonorrheal infection, go at it as though you were going after rattlesnakes. The eye of a man is worth something. If you do not believe it, knock out the eye of a man, and see what a jury will do.

The mouth must be cleaned out. The mucous membrane is tender. Rough handling will break the mucous membrane, and then infection will enter.

Then comes the important part, the umbilical cord. Infection from the umbilical cord has killed thousands of children in this country. Some of us are too particular, or seemingly too prudent. Some of us use a preservative. That should not be done. Let the cord shrivel up and drop off. Within my personal knowledge is a case, in one of the best families in North Carolina, of a child which died of tetanus twenty days

after birth. That means gross carelessness on the part of some one. The germ could not get there unless it was carried there, and it was carried there and the child died of tetanus.

I believe these children should be cleaned with oil, or with liquid albumen. The child should be cleaned from head to foot. I have seen one child die through infection of the ulva, because it was not cleaned properly. The prepuce of all boy children should be retracted within the first few days of life. I want to say that I am opposed to circumcision. I believe that what God Almighty put on a baby he wanted to stay there, and He has more sense than any of us. If you treat the prepuce correctly, by the end of a month it is well, and an operation never has to be done.

Now, about the clothing. I believe that every child, whether born in January or August, should have flannel put on him the day or night he is born, regulated according to the season, of course. He should wear that flannel until he is 2 years old. In summer a flannel band and his napkin are all he needs. A thin muslin dress, a little Rubens shirt and a napkin are all that a baby needs on a day like this. In winter, put on heavier flannel. Another thing, make it a rule, except in stormy weather in January or February, to take him outdoors every day.

As to infection, one of the important things to remember is that infection can come before the baby is born, can come during the time it is being born, and immediately after. If there is any tuberculosis around, the baby can contract it before birth. I do not mean that it is inherited; I am opposed to that theory. I do not believe a child inherits anything but habits and money and character. He may inherit being a thief, if his mother or his father is a thief, but I do not believe that he can inherit tuberculosis. He can get gonorrhea in his eyes while he is being born. He can contract tuberculosis after he is born.

An important thing is the infection of the nose and throat. If you will take care of that infection, then you can stop all of this taking out of adenoids and tonsils, simply because a $25 gold piece lies right under them. Pneumonia follows rapidly after infection of the nose and throat.

Infection of the umbilical cord is a dangerous proposition. It is infection that is carrying away these children. That is the reason why so many are dying in the first year or two of their lives. It is because of infection, and preventable infection, at that. Sometimes they swallow things that bring bad gastro-intestinal conditions. A child that is fed from the mother's breast and that has a good nurse rarely has ileocolitis unless some fool nurse gives him something he should not have to eat. Tuberculosis is contracted from the mother or the father. As soon as a

child is delivered from a tuberculous mother, it should be taken away and put in another room. It is the handling by the mother that produces tuberculosis, and not so much the nursing.

Now, about the food.

Don't be in too big a hurry about feeding the newly born child. The wise Creator has so fixed things that the food is held back for three days or more. In the first three days of life we see the most trying metabolism the system undergoes. The child, filled with food from the mother, who has been handling it for him, is cut loose, and a new and wonderful condition at once is set up.

Water freely is here needed and demanded, to hold in solution the chemical salts and wash them out without harm and hurt.

I have a baby nursed every six hours the first twenty-four hours; every four hours the second twenty-four hours; every three hours the third twenty-four hours; then every two hours, or ten nursings in twenty-four hours, until six weeks old; then I go to two and a half hours, then to three hours, then to four hours.

There is nothing to feed a baby on that is so good as mother's milk. If the nurse will do her full duty with the mother's breast, in massaging and caring properly for it, will feed the mother freely and judiciously, keep the nipples well, and see to it that the baby nurses regularly, in the greatest majority of cases the mother can supply food for the baby.

Now and again we see a fool mother who does not want to nurse her baby. Make her nurse. It is the best advice I can give you. I did not intend to, nor will I, go into artificial feeding in this period.

PRACTICE OF MEDICINE.

TUBERCULOSIS IN SCHOOLS AND COLLEGES.

Dr. James B. Bullitt, Professor Pathology, Medical Department, University of North Carolina, Chapel Hill.

It would seem superfluous in a meeting of this association to dwell upon the prevalence of tuberculosis among all classes, and especially among the young. But the very fact of this well known prevalence of a relatively preventable disease justifies repeated emphasis upon the need for more careful sanitary supervision than generally obtains today.

It has been happily said that the first commandment in educational matters is, "Thou shalt not injure the child committed to thy care." Of late much has been done toward the improvement of general sanitation in our schools. Many of the laity have become deeply and intelligently interested in this problem, and the dangers incident to school life have been greatly reduced. But as yet, in most of our communities, there is no organized control of school sanitation, and such good results as are obtained come from the isolated efforts of interested individuals. Medical inspection is much talked about, but even in the few schools in which it has been adopted it is seldom efficiently maintained. In consequence we still speak of the ordinary infections of childhood as "school diseases." The slow development of tuberculosis, together with the fact that the child so often contracts it from adults at his home, prevents us from thinking of it especially as one of the school-borne diseases. Yet a study of school children leads to the strong suspicion if not the absolute conclusion that a great many of these infections are contracted through this necessary association.

In specific instances it is difficult or impossible to establish the positive connection between the new infection and the one from which it was obtained. But frequently the evidence is so strong as to approximate proof. I will cite a few illustrative cases which have come under my personal observation.

In one of our southern towns a private school had in one room eighteen pupils, ranging in age from six to twelve years. L. R., a girl of about ten years, had a persistent cough. An older brother, who was nearly grown, was dying of consumption. So far as I can learn, there was no close connection with tuberculosis in the case of any of the other pupils.

A water-bucket and common dipper were used for drinking purposes, and in other respects a corresponding lack of hygienic care prevailed. In four years the girl in question was dead. Her deskmate was in a grave condition with pulmonary tuberculosis. A boy who sat immediately in front of her was unable to complete his education for the same reason, though he subsequently recovered. One other girl developed Pott's disease. I do not know her subsequent history. My information regarding the other pupils is incomplete, but no other cases have come to my knowledge.

Eight young men lived in one boarding-house while attending one of our smaller southern colleges. One had a tubercular family history, but was apparently free from the disease, and he remains well today, after nearly twenty years. The man in whose house they lived had tuberculosis, from which he died two or three years later. A daughter had died of this disease a year or two previously. Another grown daughter and a grown son were "delicate" and were generally supposed to be consumptive. They both died of this disease within a few years. Two younger children are still living and well. The college authorities were well aware of the history of this family, yet this house was recommended as a desirable boarding place because the landlady was an excellent housekeeper and maintained a good table. Of the eight boarders at the time referred to, two developed tuberculosis before completing their college course. One recovered; the other died within a year after his withdrawal. I have no record of the other six.

Twelve years ago a negro janitor had charge of twelve dormitory rooms in one of our State universities. He was honest, industrious, and efficient, and although in almost a dying condition, he continued to attend to his work. On two occasions that came to my knowledge he had hemorrhages while making fires in these rooms. His condition was reported to the university official who had supervision of the janitors, but because of his fidelity and long service he was continued in his position until he became bedridden several months later. Of the sixteen students occupying these twelve rooms during that session I know of two who developed active tuberculosis within the succeeding two years. Both have apparently recovered, but at considerable expense in time and money. In the absence of any other discoverable exposure, it is hard to avoid the conclusion that their infection was derived from this janitor. I do not know the subsequent history of most of the other fourteen. It is of course possible that some of them may have suffered also.

An investigation of other schools would certainly bring to light many similar cases. The ignorance and negligence of school and college au-

thorities regarding this question is often appalling. Even when a genuine attempt at care is made, there are many difficulties in the way of successful scientific management. Moreover, if the executive authorities of an institution exercise precautions that are unusual in other schools and colleges these efforts are apt to be misinterpreted by their patrons. The principal of an excellent institution in this State recently wrote me as follows: "The great difficulty about measures to prevent disease is that if one institution insists upon vaccination for smallpox or for typhoid, or insists on measures to prevent a tuberculous patient from getting into the school or developing there, there is a natural feeling that people will say, 'What is the matter with that place? There must be some particular danger.'" This gentleman has been very active, however, in trying to enforce necessary restrictions and at the same time has been reasonable in avoiding extreme procedures that might work undue hardship upon his prospective pupils.

While we all know that much tuberculosis exists among our school children and college students, yet I know of no accurate figures along this line. Moreover, the authorities of these institutions, as a rule, have almost no information as to the extent of this infection and have no effective machinery for investigating it. With a view to directing their attention to this important matter, and also with a view to obtaining some idea as to amount of attention now being paid to it by these authorities, I sent the following letter and questionnaire to the president or principal of each of the ninety-five colleges and boarding schools of the State:

Dear Sir:—I am attempting to gather some data regarding the prevalence of tuberculosis in our schools and colleges, and also some data regarding the provisions now in effect for preventing the disease in these institutions. The toll taken by consumption is especially heavy during late adolescence and early adult life. Among our educated classes we should be able to restrict this loss to a minimum, even if we cannot abolish it entirely. So far as my opportunities for observation go, there is little active effort made in educational institutions either to locate the numerous incipient cases and give them their chance for recovery or to establish such methods of sanitation as will protect our susceptible youth from the various sources of infection that surround them.

With the ultimate view of trying to offer suggestions for constructive antituberculosis sanitation, I wish to collect facts regarding existing conditions. Therefore, I am sending this questionnaire to all the colleges and boarding schools of this State. I know that you feel a deep interest in all that concerns the welfare of the young people intrusted to your care. I shall greatly appreciate the courtesy if you will fill out, or request the proper official of your institution to fill out, the inclosed blank. Some of the questions you can

probably not answer exactly. In such cases, please give, if possible, an approximation. I shall be very glad to have any additional facts, not covered by these questions, which you may consider of value in this investigation. I shall also be grateful for any suggestions you may care to make as to methods for improving present conditions.

In a recent study of a class of about eighty boys and young men there were four cases of early but active tuberculosis. These were in the readily curable stage, but without attention might have speedily become hopeless. None of these would have been recognized without a medical inspection; yet each was in distinct danger of passing into a serious state of ill-health, and each constituted a menace to his associates. I cite this instance in order to make more clear my purpose in sending this letter.

Any information which you may give me will be regarded as confidential. It is my intention to publish a paper on this subject in the near future; but this will deal with the general conditions and no mention will be made of any particular institution without the permission of its executive authorities.

QUESTIONNAIRE.

I. No. of students:
   1. Total_____
   2. Number in dormitories and other buildings controlled by institution _____
   3. Number in private boarding-houses_____

II. Housing conditions:
   1. How many students usually occupy one room?_____
   2. With two or more in a room, do they occupy separate beds?_____
   3. Are the rooms generally airy and well lighted?_____

III. Board:
   1. How many eat at the general mess halls?_____
   2. How many eat at private boarding-houses?_____
   3. How many eat at restaurants and hotels?_____

IV. Exercise:
   1. What facilities are offered for regular exercise?_____
   2. Is physical training compulsory?_____
   3. What proportion of the students exercise regularly?_____

V. Medical care:
   1. Is there any systematic medical inspection of all students?_____
   2. Is there any systematic sanitary inspection of buildings, *i. e.*, dormitories, class-rooms, dining-rooms, toilets, etc?_____
   3. What is the plan for care of sick students?_____

VI. Tuberculosis statistics:
   1. In case of actual or suspected tuberculosis, what provisions are made for care of the patient, and for the protection of his fellow students? _____
   2. How many cases of tuberculosis are known to have existed in the school during the past five years?_____How many suspected?_____
   3. How many cases of tuberculosis do you know to have developed in your students within two years after leaving your school?_____

VII. General remarks:

Forty-one replies were received. In one of them the answers were so imperfect and obscure that it has been discarded and is not used in the summary given below. It would have been better had the additional questions been asked, "Whether the recognized cases occurred in the dormitories or in the private boarding-houses," and also, "Whether the official inspection of buildings included these boarding-houses or only the property of the institution." In two instances the information was given me that all private homes housing or boarding students are inspected and supervised by the college physician. Doubtless the same condition obtains in some others that did not mention the fact.

A study of these figures as a whole leads to the conclusion that the executives of the great majority of our schools and colleges have very little definite knowledge regarding the tuberculosis existing in their midst; and what is more deplorable, most of them do not appreciate this fact, but think that they are exceedingly careful in this respect. It was not expected that very definite answers would be obtained in most instances. It was rather expected that the information would be meager and probably inaccurate. This has proved to be the case. It was hoped that the broad scope of the questions would elicit some interesting opinions and useful suggestions.

TABLE I.

Total enrollment:	
White (33 schools)	8,573
Negro (7 schools)	1,888
	10,461
Number housed in dormitories:	
White	5,639=65.8%
Negro	1,027=54.4%
	6,666=63.7%
Number rooming in private boarding-houses:	
White	1,618=18.8%
Negro	361=19. %
	1,979=18.9%
Number living at home:	
White	1,316=15.4%
Negro	500=26.6%
	1,816=17.4%

TABLE II.

Number of students per room:
2 schools report 1 in each room.
38 schools report 2 or more in each room.
Beds:
19 schools report 2 in a bed.
21 schools report separate beds.
Light and ventilation:
39 schools report all or most rooms as airy and well lighted.
1 school deplores poor light and ventilation.

TABLE III.

Number eating in mess halls:		
White	3,910	
Negro	990	
	4,900	=46.8%
Number eating in private boarding-houses:		
White	2,247	
Negro	387	
	2,634	=25.2%
Number eating in restaurants:		
White	100	
Negro	0	
	100	= .9%
Number eating at home:		
White	1,316	
Negro	500	
	1,816	=17.3%
Number not accounted for:		
White	1,000	
Negro	11	
	1,011	= 9%

A discrepancy will be noted between the figures given in Table I and those in Table III. The numbers given in the records of boarding places fail to account for 1,011 students given in the total enrollment. This doubtless arises from the fact that many of the figures in the latter table are merely approximate estimates due to a lack of definite records on this point.

TABLE IV.

All seem to have adequate facilities for exercise.
Daily exercise compulsory in 24 schools, optional in 16 schools.
Proportion of students taking regular daily exercise:

21 schools report	100%.
1 school reports	95%.
5 schools report	90%.
1 school reports	80%.
5 schools report	75%.
1 school reports	65%.
5 schools report	50%.
1 school reports	35%.
Average,	81%.

TABLE V.

	Required	*Not Required*
Physical examination of each student:		
White	20 schools	13 schools
Negro	2 schools	5 schools
Sanitary inspection of dormitories, dining halls, etc.:		
White	31 schools	2 schools
Negro	6 schools	1 school

General care of sick students:

15 schools have an official physician.
23 schools control or have the use of an infirmary.
6 schools set apart special dormitory rooms for this purpose.
3 schools have no special provision.
8 schools do not answer this question.

TABLE VI.

Number of Cases of Tuberculosis in Five Years.

	Recognized Cases.	
Total (40 schools; enrollment 10,461)	96	—*i. e.*, annual average of 19⅕=1⅕%
White (33 schools; enrollment 8,573)	58	—*i. e.*, annual average of 11⅗=1⅛%
White (2 schools; enrollment 1,267)	30	—*i. e.*, annual average of 6 =½%
White (31 schools; enrollment 7,306)	28	—*i. e.*, annual average of 5⅗=$^{1}/_{13}$%
Negro (7 schools; enrollment 1,888)	38	—*i. e.*, annual average of 7⅗=⅖%

	Suspected Cases.	
Total	150	—
White	58	—*i. e.*, annual average of 11⅗=1⅛%
Negro	92	—*i. e.*, annual average of 18⅖= 1%

Of the suspects, 80 are reported by one negro school; 30 are reported by two white schools.

In cases of actual or suspected tuberculosis:

23 schools require immediate withdrawal,
2 schools advise immediate withdrawal,
1 school requires open cases to withdraw, and requires arrested cases to room alone under close medical surveillance,
1 school requires the use of a sleeping porch,
5 schools report "no experience,"
8 schools do not answer the question.

It has been said that statistics constitute the most uninteresting form of fiction. The numbers involved in this preliminary investigation are too small to permit many positive deductions. Moreover, because of the unentertaining character of figures, I shall not dwell long upon these which I present. However, when we compare a brief analysis of them with the general knowledge we have of the prevalence of tuberculosis, we are forced to the conviction (1) that few of the heads of our educational institutions are properly informed regarding the amount of tuberculosis among their students, (2) that the physical examinations of students as officially conducted are usually insufficient and are often a mere farce, (3) that the sanitary inspection of dormitories, etc., is but imperfectly carried out, and (4) that some plan should be devised for systematic sanitary control of these institutions to which perforce we must intrust our children.

Table I shows that in 33 schools and colleges for the white race there is an enrollment of 8,573; and in the seven negro institutions there is an enrollment of 1,888; making a total of 10,461. In both cases the num-

bers living in private boarding-houses, and hence only partly under the control of the authorities, is about 20% of the total number. Those housed in the dormitories and subject to fairly complete control constitute 65.8% in the case of the white schools and 54.4% in the case of the colored schools. Of those living at home and subject to very slight control there are 15.4% of the whites and 26.6% of the negroes.

In only 2 schools do the majority of the pupils occupy rooms alone, while in 38 schools two or more (in several cases as many as four or six) room together. In 19 cases the usual custom is for roommates to occupy the same bed. Under these conditions the great danger of infection from any open case of tuberculosis is evident. Only one school frankly admits that its rooms are not well ventilated and well lighted. Undoubtedly, the claim of good light and ventilation is true in many cases, but those of us who have had the opportunity of observing many schools must feel skeptical in the face of such almost universal optimism on this point.

Table III is incomplete, since it fails to account for where over 1,000 students (nearly 10%) take their meals. It indicates, however, that nearly one-half of the total number eat in the dining halls conducted by the several institutions, while about one-fourth of them board in private houses and about one-fifth live at home. Less than 1% take meals at restaurants and hotels. A careful investigation of the quantity and quality of food served and the conditions surrounding its preparation would certainly prove interesting, and would doubtless bring down many vials of wrath upon the head of the daring investigator. My own opportunities for observation along this line have been too small to permit any detailed statements, but they have been sufficient to justify the general statement that here is a fertile field for devoted missionary endeavor. This matter touches our tuberculosis problem on two sides. The possibility of direct infection from tuberculous cooks and waiters and from tuberculous meat and milk deserves consideration. The importance of good nutrition as one of the great bulwarks of individual immunity, though often neglected, is so well understood that it should not require emphasis. Those of you who have not forgotten your college days will well appreciate the need for improving the diet that is so often supplied in many boarding-houses and mess halls. This criticism I believe is more applicable as a rule to the colleges, than to the schools.

Table IV is of some general interest and has an important but only indirect bearing upon tuberculosis.

In Table V we find that 37 institutions (31 white, 6 negro) claim to have systematic sanitary inspection of all buildings. How careful and

how efficient such inspection may be cannot be gathered from the reports received. In many cases it must be quite superficial and of little value. In others it is apparently well done. In one prominent college a daily inspection is made by a member of the faculty in semiexecutive authority; a monthly inspection is made by the college physician; and an annual inspection by an official of the State Board of Health. In another the college physician makes weekly inspection of all the college buildings and also supervises all student boarding-houses. In two of the preparatory schools the rooms are inspected daily by one of the teachers. Detailed data are wanting in the other reports.

A systematic physical examination of each student is reported by 22 schools (20 white, 2 negro) while 18 (13 white, 5 negro) have no such provision. Only one institution makes it clear as to how detailed this examination is. This principal writes the following: "Besides their being measured and tested by the physical director, their lungs are examined with a stethoscope by the school physician, no exception being made in this case, and if there is the least reason for suspecting anything, the student would be examined further. . . . In the case of one girl who seemed anemic, she was examined for pretty much everything that one could suspect, including malaria (sputum, feces, blood, etc.)." In a few other schools this examination seems to be carefully attended to, but in most of them it is probably perfunctory or at least inadequate. The figures given in Table VI throw some light upon this question.

Table VI. The total number of cases of tuberculosis recognized in the 40 schools during the past five years is 96. This is an average of $19\frac{1}{5}$ for each year, out of an enrollment of 10,461, or only $\frac{1}{5}$ of 1%. As might be expected, the percentage is much higher among the negroes than the whites. Among the former there are recorded 38 cases in the five-year period, an average of $7\frac{2}{5}$ per year out of an annual enrollment of 1,888, which gives $\frac{2}{5}$ of 1%. Among the latter, 58 cases are recorded for the five years, an average of $11\frac{3}{5}$ out of the annual enrollment of 8,573, which gives $\frac{1}{8}$ of 1%.

These figures are evidently much too low. I cannot give an accurate estimate of what they should be. But during several years when I did a considerable portion of the student practice of one of our southern State universities I used to discover tuberculosis in more than 1% of the total student body, though I probably never saw more than one-third of the total number professionally. It is interesting to note in this connection that two institutions with a combined enrollment of 1,267 report 30 out of the 58 white cases. This gives $\frac{1}{2}$ of 1% annually for these two, while the other 28 cases out of 7,306 students would give an annual

incidence of only $\frac{1}{13}$ of 1%. This comparison is the more illuminating when we consider that these two institutions are among those which seem to have a thorough system of examination of the students and a careful inspection of the buildings. It is clearly not because they have more tuberculosis than the rest, but because they hunt for it more closely. Along this line it may be further noted that of the 13 white schools which require no physical examination, 8 (*i. e.*, 61%) report no tuberculosis and the other 5 report 11 cases; while of the 20 white schools requiring such examination, 13 (*i. e.*, 65%) report no cases and the other 7 report 47, of which 30 are recorded by the two institutions referred to above. The conclusion seems inevitable that the great majority of these examinations are most perfunctory—if indeed they be not a mere myth. Nevertheless I am convinced that these optimistic reports are entirely sincere. Moreover, the tone of the letters received in answer to my questionnaire makes it evident that they desire to exercise every feasible precaution and that they would gladly coöperate in an effort to improve existing conditions. These educational executives are intelligent and honorable men and women, but they are ignorant of some matters of sanitation upon which they ought to be informed.

The statements regarding suspected cases are too indefinite in most of the reports to justify much consideration. There are 150, all told. Of these, 80 come from one of the negro schools; 15 come from one of the white colleges which reported a large number of positive cases; while one of the preparatory schools which reports no positive cases, reports 15 suspects, which "upon careful examination proved negative."

In answer to the question as to the course followed in case of actual or suspected tuberculosis, one college makes the sane reply that "open cases are required to withdraw, while arrested cases are allowed to remain, but must room alone and are subjected to careful medical surveillance." Twenty-three institutions announce peremptory dismissal without regard to the stage of the disease. One goes so far as to refuse admission to any pupil "coming from a home in which there is or has been a case of tuberculosis." How few of us would obtain an education if this were really carried out by all the schools! In another case the school physician gave the advice "to have removed from the school any one who had been exposed to a tuberculous patient." But the principal very wisely considered this an unnecessary and cruel procedure, and decided "to watch any such case, and at once remove it" if any symptoms should develop. One optimistic principal informs me that he does not have to consider this matter, because the atmosphere about his school is so pure (according to his school physician) that no germs of typhoid fever, tuberculosis, or inflammatory rheumatism can live there.

The object of this paper has been merely to point out the general lack of information concerning the amount of tuberculosis in our schools and colleges, and also to indicate how insufficient are the present methods of safeguarding our children during their adolescence and early maturity. Criticism is of doubtful value unless it is accompanied by some constructive suggestions. Two questions immediately arise: Why do the present conditions exist? What can we as physicians do to improve the situation? The prime purpose of this preliminary paper is to provoke a frank discussion of these questions.

Briefly, the problem to be attacked resolves itself into three divisions:

I. The proper construction of the buildings used (*i. e.*, the dormitories, the class-rooms, the dining-rooms, the boarding-houses).

II. The maintenance of proper nutrition and the avoidance of infection through the food.

III. An efficient medical inspection of all buildings, and an efficient physical examination of the pupils, the teachers, and servants.

In order to obtain these desired results a vigorous but tactful campaign must be waged. This must consist of the dissemination of the necessary information as to the existing conditions among the teachers, the boards of trustees, the pupils, the parents, and, sad to say, among the doctors as well. Success is attainable only with widespread coöperation between the different schools, between the schools and the boards of health, and between the boards of health and the organized medical profession. I think we can confidently count upon the willing coöperation of a large proportion, if not all, of the presidents, principals, and teachers in any reasonable campaign we may attempt to wage.

DIAGNOSIS OF INCIPIENT TUBERCULOSIS BY THE GENERAL PRACTITIONER.

Dr. Charles O'H. Laughinghouse, Greenville, N. C.

Public sentiment in North Carolina has the right to draw a bill of indictment against the patient, the family, or some physician for every case of tuberculosis which is permitted to progress beyond the incipient stage, undetected and unreported to the State Bureau of Tuberculosis. Some will say this is an indictment against the medical profession. It is an indictment, based on evidence, that in the fiscal year 1914-1915

there were 5,000 deaths from tuberculosis in North Carolina, and there are today 15,000 to 20,000 cases within the confines of the State.

I realize that the diagnosis of incipient tuberculosis is no easy task; that a broad knowledge of incipient disease in general is essential to its successful undertaking. I realize, too, that until the profession meets this responsibility, with credit to itself, that the fight against this dread disease has not even begun. Educational, sociological, and preventive medicine may spread information abroad in the land ever so wisely and ever so well; but the satisfying assurance of the medical man—his "Go along, my friend; you are just a bit run down"—will take from the ammunition used in the fight against tuberculosis everything except the big noise and the blinding smoke.

We general practitioners cannot hope to perfect ourselves in the art of percussion and auscultation sufficiently to ascertain from its practice that information which comes to him who does this work exclusively; but if our training along this line is not such as to give us the ability to gain from it whatever information it contains, we can send our patient to an internist who will give us a report as to his findings. We send our abdominal cases to a surgeon for an exploratory incision, without hesitation. It is to our credit that we do it. Yet we dally with probable incipient tuberculosis, leaving it to go from day to day, knowing that it is a question of now or never, so far as our patient and his immediate associates are concerned.

Lane's kinks, gastric ulcers, and the like, when opened for diagnosis and relief, by surgical means, present a more dramatic picture than a painstaking effort at diagnosis which reveals an incipient tuberculosis; but I take the position that the successful detection of tuberculosis in its incipiency does more to prolong life, promote efficiency, and lessen the State's death rate.

We do not wait for jaundice in cholelithiasis, or hemorrhage in gastric ulcer, before making our diagnosis and relieving our patients, or having them relieved by surgical means, even though these diseases rarely cause death and are not catching; then why should we wait until we find tubercle bacilli in the sputum before making our diagnosis of incipient tuberculosis? I am a strong friend of the State Laboratory of Hygiene. It does a tremendous service. It is managed by most capable men. But I am positive in the conviction that it has proven more of a stumbling-block than a stepping-stone in the prevention of tuberculosis. Not through any fault of its own, but because too many of us fail to give expression to or act upon our diagnosis until we can confirm it by laboratory findings. Radiology, microscopical and chest findings are useful, very useful, in the hands of an expert; but the general practitioner can-

not hope to be benefited by them in the diagnosis of incipient tuberculosis, except in so far as to accept their aids as they come to him translated by those specially prepared to interpret their language.

Dr. Richard Cabott makes the statement that not 10 per cent of the physicians in the United States can make a diagnosis of incipient tuberculosis. If this be true, why is it true? Is it because we lack a knowledge of incipient diseases sufficient to permit us to sift our cases and determine which is tuberculosis and which is not? Or is it because we are unwilling to give the painstaking, time-taking, and systematic attention to the undertaking that its importance demands?

I believe we can sift incipient tuberculosis from the mass of disease that comes to us, at all times and under all circumstances, because the composite information obtained from a careful and prolonged study of an individual's history, temperature, physical examination, and symptoms, backed up by the tuberculin test, will in most instances put us in position to do so.

History.—The history should be exhaustively minute, because, from a general practitioner's standpoint, more can be gained from it than from the physical findings. A family history that is entirely negative means nothing pro or con, but a tubercular patient, brother, sister, relative, or any person living in the house, gives grounds to suspect infection, past or present.

A childhood history as to pleurisy, hydrothrorax, marasmus, grippe, frequent colds, sequels to measles, whooping-cough, and the like, if they reveal nothing else, surely they give us an idea of the resistance and sequels to infectious diseases. A personal history should bring out as clearly as possible the associates in school, office, store, factory, or farm, for here it is that the 20,000 consumptives now roaming around within our State are passing the disease along to those who can receive it. A personal history will reveal illness, past or present, such as indigestion, malaria, grippe, pleurisy, etc. It goes into the habits, a knowledge of which ofttimes is essential to correct conclusions. It gets information that can be obtained in no other way, as to appetite, sleep, "that tired feeling," cough, expectoration, loss of flesh, other diseases, etc. So important is the personal history that we must not be content with what the patient sees fit to tell, but we must quiz in such a way as not only to get the patient's interest, but to suggest points from which useful data may be elicited. Any cause of ill-health not definitely explained should at least arouse the suspicion of tuberculosis. On the other hand, if a patient's condition of poor health has remained stationary for a long time, search should be made for some other etiological factor.

The possibility of a mixed infection should always be borne in mind. I recall a patient of my own who died not many months ago with tuberculosis, hookworm, malaria, and gonorrhea.

Temperature.—Nothing is more important in the diagnosis of incipient tuberculosis than a study of the temperature. It should be recorded every two hours. The thermometer should be held in the mouth not less than five minutes, because a fraction of a degree means much. Fever may be absent, remittent, or intermittent, but if it is taken early in the morning, before getting out of bed, it is usually subnormal, rising and falling during the day in accordance with the patient's physical efforts and physical rest.

Physical Signs.—Every physical sign found in incipient tuberculosis is produced by other conditions, and incipient tuberculosis may exist and give no demonstrable signs that inspection, palpation, percussion, or auscultation can ascertain. It is an incipient disease, so we need not look for any other than incipient signs. Slight deviations from the normal is all we can hope to get. Failure to realize this makes the attempt at diagnosis a failure.

Inspection.—Possibly a slight flush of the cheek, not constant enough to rely on; cyanosis of the fingers; widely dilated pupils, or a whitish-gray pallor, while not constant, are, when present, very, very suggestive. A slight flattening above the clavicle and a slight dropping of the shoulder, with some limitation of motion, may be present.

Palpation has proven of no service in my hands, other than to elicit enlarged cervical glands and a rapid pulse, both of which are important findings.

Percussion, to one long and adequately trained, is undoubtedly most useful; but it has proven useful to me only in those cases that have progressed beyond the incipient stage.

Auscultation is supposed to give evidence of the earliest abnormalities to be elicited by physical examinations, though the general practitioner finds many cases in which this does not hold true. Any abnormality of the breath sounds is to be looked for, however; diminished breathing, roughened breathing, granular breathing, prolonged expiration, and râles, sometimes, not always, but often, brought on by coughing.

The tuberculin test, to my mind, gives promise of doing more toward diagnosing incipient tuberculosis than all other methods combined. Certainly to the general practitioner it commends itself most strongly, in that it is simple as to technique, harmless when properly used, all things being considered, and sufficiently accurate to at least put us in position to deny the existence of tuberculosis when the test is negative.

I have taken your time, gentlemen, but with the discussion of a subject that is to North Carolina its most important subject. The battle against this scourge is in your hands. Whatever has been done, whatever remains to do, depends almost, if not entirely, on your proficiency in making a diagnosis of this disease in its incipiency.

Dr. L. B. Morse, Hendersonville: The subject of the early diagnosis of tuberculosis is one that is always most interesting, and one to which a person is constrained to add what little he can. Dr. Dunn has discussed it well, but I want to comment briefly on Dr. Bullitt's paper. I think it shows the all too often disappointing feature of questionnaire letters. I want to speak also of the fact that throughout his paper, in the paper of Dr. Laughinghouse, and in the paper of Dr. Frazer, who spoke under the Section on Pediatrics, there obtains what is becoming the older idea of the contraction of tuberculosis, *i. e.*, the actual getting of what is supposed to be an infection from an adult, or reinfection. I do not mean that it is necessary to discard that idea, but if we are to follow the most recent conception of the origin of tuberculosis, it is that the chances are that the adult rarely contracts tuberculosis from without. It is a metastasis from a child infection that accounts for the incidence of a clinical tuberculosis later. Surely this is more than justified by the evidence at hand.

One more point along that line. I would take exception to the remarks of Dr. Frazer this morning, viz., that tuberculosis is essentially a child disease. We are bound to make a sharp distinction between the cases that are infected and the cases that have a manifest clinical tuberculosis. Following a word coinage of Dr. Fischberg, of New York, I think it is best to call them tuberculizations, meaning that they are latently infected, but not in the sense of having a clinical, manifest tuberculosis. The great fight against tuberculosis, in my judgment, is not a fight against adult reinfection nearly as much as it is upon bringing about those hygienic measures which will prevent a metastasis from the latent foci.

Dr. ————————: I would just like to speak for the country doctor about the diagnosis of tuberculosis. We have had most excellent papers along that line, and I certainly agree with their conclusions. But of all the aids a country doctor must have in the diagnosis of tuberculosis, I think the clinical thermometer comes first. When a doctor lives in a malarial country, when a patient comes feeling run-down, with loss of appetite and loss of flesh, give that man some quinine, and have his temperature taken not less than five times a day. If his temperature

keeps on rising, he has malaria; but if there are variations, subnormal temperature in the morning and exacerbations in the evening, the case is usually tubercular. I use tuberculin and find it of great value in diagnosing obscure cases; but a country doctor does not always have tuberculin, and I think the thermometer is the best guide.

Dr. W. R. Kirk, Hendersonville: I notice one thing especially to which our attention was called in the paper, and that is the use of the tuberculin test. I want to make a remark or two about the tuberculin test. Too much dependence must not be put in it. As an aid to diagnosis, it has its place, and a valuable place. In the case of children it is of some value in the diagnosis of the activity of tuberculosis. Later it does not tell us the main thing that we want to know, and that is whether the case is a clinical type of tuberculosis or whether the tuberculosis is active. In other words, it does not distinguish between active and latent tuberculosis. I say that because we sometimes have a case referred to us as tuberculosis merely because it has reacted to the tuberculin test. So we cannot depend upon the test alone to diagnose the case; we must depend upon the history and the symptoms. We must not look for adventitious sounds in early tuberculosis, but must regard the history, more especially.

A PERSONAL ESTIMATE OF PSYCHO-ANALYSIS AS A DIAGNOSTIC METHOD IN NERVOUS DISEASE.*

J. Allison Hodges, M.D., Richmond, Va.

Diagnosis by dreams is the theory of psycho-analysis. A most interesting study, and holds enough of the mystic and scientific to stimulate the enthusiasm of many advocates. It is dependent on two facts, namely, that our dreams are the stories of our wishes and that our mental life is divided into the conscious and unconscious, and that the unconscious or subconscious repression of our desires is often the cause of subsequent irritation and disease.

In my opinion, there is a great deal in the theory, but practically, and especially for the average physician, its methods are uncertain and inapplicable in many cases.

I believe that it is founded on a principle which has been long neglected by physicians, for most of us are too prone to treat the disease that

*Abstract of remarks.

is present and not consider the patient, or the patient's past history and life outside of the clinical symptoms that have arisen in the progress and manifestation of disease.

In other words, disease expressions are not always due entirely to the active cause, but may be due to underlying factors that are remote, and yet a present irritant.

The function of the psycho-analyst is to unravel past impressions which have become subconscious to the patient and properly value them as to their bearing upon the case in question.

The psycho-analyst believes that this can be done only by the proper interpretation of dreams, but at the same time believes in the "confessional" which he has established between himself and the patient, and my purpose in directing attention to this subject is to affirm that I believe that if the average practitioner would devote more time to a careful and conscientious study of the past history and inner life of the patient there would be less necessity for relying so much upon the dreams of the patient.

In the hands of specially trained scientists, psycho-analysis is more or less easy of application; but in the practice of the family physician the method is difficult, precarious, and unsatisfactory.

I believe, too, that most valuable information is often lost because we are frequently too rushed to devote sufficient time to the analysis of our cases and are too ready to treat symptoms, irrespective of the past.

Furthermore, "He who thinks he is sick, is sick," in my opinion, as Sydenham long ago dogmatically stated.

In fact, few reach maturity without discords having been struck upon the delicate strings of the soul, and these discords later rise to nag and vex.

By tracing present symptoms back of memory, back to their lodgment in the subconscious mind, the practitioner is often able to effect a cure.

This is the hope and the therapeutic end of psycho-analysis: to unravel the tangled web of life for those who, because of the pressure of unconscious forces, are living less than a full, free life.

This system of soul analysis, meaning by soul the whole stream of mind life, conscious and unconscious, comprises a study not only of disease, but of faults of character and errors in training as well.

It interests its disciples not so much in the study of symptoms as in the cause of the symptoms, and its pathology concerns itself with origins.

Its first step is the negative determination that the symptoms have no physical origin.

Its next step is to locate their beginning in the mental or nervous life of the individual by a study of the patient's dreams, and claims that it

finds in sex-disturbance the focus and originating cause for a large group of our miserable ills.

We may be incredulous, but must admit that there is a large group of nervous disorders in which the physical derangement is perfectly real, but the origin is purely mental.

As an example of physical effects from a purely mental origin is the whole group of hysterias. Note, for example, a man lying flat on his back for ten years, and all the result of hysteria; or a woman may go totally blind because of a condition of mind.

This system, of course, does not seek to relieve those nervous or mental disorders which have a physical basis or origin, such as neuritis, neuralgia, paralysis from pressure or hemorrhage, brain tumors, arteriosclerosis of the brain, etc., all of which show destruction of nerve tissue and are due to direct physical causes. But outside of these there are manifold nervous conditions which have no physical derangement, and it is to these that the diagnostician-by-dreams applies the theories of his system; and the amazing thing about it, the seeming miracle of it, is that the analysis is the treatment and the cure.

When Shakespeare made Macbeth ask the doctor, "Canst thou not minister to a mind diseased, pluck from the memory a rooted sorrow and raze out the written troubles of the brain and heart?" and the doctor made reply, "Therein the patient must minister to himself," Shakespeare voiced the present-day therapy of psycho-analysis.

By this system the patient works his own cure when his mind is opened to the true significance of some incident that may have happened years ago, but left its irritating scars which have never healed.

The analysis is supposed to be made by a study of the dreams. The harmful effect of past incidents and conditions is due to the fact that they are unconscious. As soon as they are made conscious, they vanish, it is claimed. For example, the paralyzed woman: the paralysis traced back to disloyalty of her husband, etc.

In confirmation of the fact that many of our desires are repressed, it is essentially true that a distinguishing feature of child-life is want-life—day dreams. The child habit is duplicated in our night dreams; if poor, we dream of wealth, etc.—every dream the expression of a wish. Hence disease, says the Psycho-Analyst, is a wish gone wrong. According to Freud, we are thrown into life with an all-consuming want or love-life (libido) within us. It is often suppressed in the child. It grows by what it feeds on. It wants, wants, and yet is buried deep; it is silent, speaks no language, but just yearns. If it is satisfied, all is well; if not, beware!

Add to this the second fact alluded to, the conscious and subconscious life, and the mystery of it all grows and enlarges.

The conscious mind is the educated, trained mind of our daily thinking. Memory and judgment rule. Everything that happens is chalked upon the board so that we can read the score.

But that is not the larger part of our life—in fact, it is the least important. The unconscious or subconscious is a sort of basement of the mind into which we throw all the rubbish, all the "don't cares," all the "forgetables" that burden or mortify or annoy us and hinder our enjoyment of life. To use a psycho-analytic term, we "repress" them. These memories, naughty children of our minds, also (closeted in our cellars) rise up in secession and produce conversion—hysterias, etc. We thought they were gone; but not so.

In my opinion, many of these buried facts which are as much irritants to the higher nerve centers as ulcers may be to the mucous membranes, may be brought into the light of clinical consideration as certainly and thoroughly by detailed study of the past life-history of the patient as by the interpretation of the fragments of the patient's dreams.

To succeed by either method, however, patience, tact, and care must be exercised wisely to make therapeusis effective.

Dr. ————————: I want to ask Dr. Hodges to answer just two questions: First, as to the principle of auto-suggestion; second, to give us an explanation as to why all these aberrant impulses arise from the sex impulse.

Dr. J. Allison Hodges, Richmond, Va.: Dr. Hyatt's first query is one of such magnitude that it is impossible to take it up at present. The greatest and most pointed criticism brought against this theory is that there is a sex impulse, a libido, which seems to dominate and direct all our actions as human beings. I am willing to admit that if we take the word "sexual" in its usual application, it is false. But children are born into this world not only with the sexual impulse, but with all their want life developed to the utmost. The sexual impulse is the strongest. Children at six years of age are cognizant of domestic events, and parents should be warned not to handle and fondle and caress their children excessively, and children at or about five to six years of age should not be allowed to sleep in the same bed with a parent, because of the danger of arousing the sex instinct.

Psycho-analysis can be applied by the average physician in getting at the absolutely dark facts in the past life-history of the patient, but a great deal can be done with psycho-analysis without the necessity of

interpreting the dreams of the patient, if we can get *en rapport* with the patient, and get him to tell us the mortifying things that have happened to him, perhaps years ago, and that have been repressed.

I had a case not many months ago of a highly educated woman in this State who came to me. After I examined her thoroughly, I told her I could find no evidence of physical disease and could do nothing for her medically. Nevertheless, she was depressed and melancholiac, and she refused to go home. Finally I told her that I could do nothing for her, that she must have repressed something, and unless she was absolutely honest I could not help her. Then she told me an amazing story of a mortifying incident of her child-life.

Later, the neighbors found it out, and the Federal authorities found it out and told her father that they must remove from that section of the State.

After getting her to make this confession, which is along the same line as the interpretation of dreams by psycho-analysis, and after showing this woman that the offense was not nearly so great as she had imagined, and that it had come from idleness and lack of social life, etc., and that it should not darken her whole life, that blot was removed from her life and she has been restored to health and is able to live a happy, useful life.

I have given you the story of this case in order to show you the use of psycho-analysis in getting down into the recesses of the heart and mind of the patient through the confessional, and not necessarily through the patient's dreams.

Dr. J. Howell Way, Waynesville: Mr. President, if in order, I desire to call attention to the presence in the hall of the recent president of the Medical Society of Virginia, Dr. Southgate Leigh, of Norfolk, Va. Dr. Leigh is also an ex-president of the Seaboard Medical Association, and of the Tri-State Medical Association, and a widely known surgeon. I take pleasure in moving that the courtesies of the floor be extended to him.

This motion was seconded and carried, and the president asked Dr. Leigh to address the society.

Dr. Southgate Leigh, Norfolk, Va.: Mr. President, and members of the North Carolina State Society, I appreciate very much your kindness. I am delighted to have the opportunity of being with you today. I bring from the Medical Society of Virginia the warmest fraternal greetings. I am directed by our president to present to you his con-

gratulations and best wishes. We in Virginia have great admiration for the wonderful work you have done, especially through your organization. We feel that you are leaders in many things that go to uplift our profession.

Although a little out of my own chosen line, I have been tremendously impressed today with the magnificent work that you are doing in preventive medicine. It is something marvelous. The thought brings up to me a problem that I believe is facing us in our State, and I was hopeful that you had felt that the same problem was before you, and that you would help solve it, as you have always been the leaders in solving the problems of the past. That problem is this: We are coming, we are bound to come, to contract practice. The word sounds harsh, because of the use or abuse of it in the past. But without recompense, without financial return, we are saving the lives of our people and greatly lessening the amount of sickness, and in doing so cutting ourselves out of our own income. We do not begrudge this service, but we have to live. I believe this is a serious question, and I mention it purposely at this time because I believe it will be taken up by the Medical Society of Virginia in the near future. We must devise ways and means whereby, legitimately and properly, the members of our profession may be employed by the families and individuals of our communities to keep them well. What a magnificent work that would be, to be employed to watch over our people from the cradle to the grave, to keep off sickness from individuals just as we do from communities.

I say that this is a problem that we have to face, and we have to face it in the near future. We are doing this preventive work, and we ought to be paid for it. There is no reason in the world why men should give their time and talents for nothing, as so many of our general practitioners are doing. I hope that you will take up this problem and try to solve it, and tell us how to go about it in a professional way.

In Virginia we have another problem which I believe you have already solved, and that is the elevation of the standard of medical education. In your State you have done nobly in raising your standard. In Virginia we have combined two of our colleges, and I hope that in a short time unselfishness will prevail and we shall have only one medical school, the medical department of the University of Virginia, located at Richmond.

Another thing: West Virginia has a protective insurance plan which our States might well consider. Its object is to protect the members of the society from unjust litigation. It is something that we will take up at our coming meeting, and I hope that it will also meet with your consideration.

Dr. L. B. McBrayer, President, Sanatorium: We are delighted. We hope that the encouraging words of Dr. Leigh will enable us to move forward along these important lines. We have a Committee on Medical Defense, as we call it, that has been out for two years, but we have been unable so far to get them to report. We hope that they may report at this meeting.

THE CAUSE OF PELLAGRA AND TREATMENT SUGGESTIONS.

B. W. Page, A.B., M.D., Lumberton.

The cause of pellagra has not yet been settled to the satisfaction of the medical profession, and the more one reads the many theories advanced as to its etiology the more at a loss he becomes as to what is the correct answer. I shall not attempt to review the many ideas already presented, but shall endeavor to summarize briefly a little investigation I have attempted to make for the past several months.

In July, 1912, while examining a supposed case of amœbiasis, I observed a very small organism, oval in shape, that developed into a slender bacillus. In the course of time I noticed the same organism in eleven other cases of chronic dysentery, and associated it with the latter affection. In tracing my cases in the summer of 1914, I found that two had died, three had moved away, five were being treated for pellagra since other clinical symptoms had developed, and the remaining two were still infected and did not reveal the cutaneous signs until spring of this year.

Omitting several specimens mailed to me without case histories, I have examined up to the present time one hundred and twenty-six cases. Ninety-two of these have revealed the cutaneous manifestations as well as the digestive and nervous symptoms of the disease. The remaining thirty-four have had nervous and digestive symptoms only. In sixty-seven cases examined, more than one time I have found the organism to be constant except after the administration of certain drugs, which retarded their development and seemed to render them nonmotile. I have been unable to find the organism in normal specimens or associated with other diseases.

The organism presents itself in two forms, with variations of each. First, a small oval, cell-like body, which develops into a slender bacillus about as long as the diameter of a red-blood corpuscle. These often vary in size, depending upon the artificial media on which they grow, and in

feces according to the variety of food ingested. As the rod develops from the oval form it is very active. It seems to be without flagella and gradually becomes less and less motile until the true form of a bacillus is reached. The nuclear material at first seems to be evenly distributed throughout the cytoplasm. As soon as the bacilli come to rest they increase in diameter from two to three times, apparently. The hyaline cell contents become turbid and small granules are visible with higher magnification throughout the length of the rod. As these granules develop into cells, the delicate membrane inclosing them gradually disappears and the cells are freed. For a short time these small cell-like forms are very sluggish, but in a favorable medium and temperature they soon become distinctly motile and increase in size.

In feces the organism is best observed in very fresh specimens and as near body temperature as possible. Even then we usually find one of the forms predominating, generally the oval form. Occasionally we find the slender rods outnumbering all other forms. Rarely do we find the beaded form of the bacillus predominating, but when this is the case they often include four-fifths of all forms of the organism. All forms are usually seen in the majority of specimens examined. Old specimens that have been exposed to different temperatures may be entirely unreliable, because of polymorphism. Every conceivable form of bacteria may be present, and the field becomes very confusing. Warming the specimen is not sufficient in every instance. A new specimen or cultivation of the old one afford the only relief. During the summer season all specimens are more reliable.

I have been unable to cultivate the bacillus except on special media. A very good growth was obtained from a filtrate of corn meal, Irish potato, and cane syrup. The medium contained about 2 per cent of each of these products. The best growth I have been able to secure was from equal parts of agar bouillon and filtrate from boiled corn meal. From this medium I was able to observe the cycle of the organism very nicely. Beginning with the oval form early one morning, I found that more than 90 per cent of them were rods by noon, and by 6 o'clock in the afternoon the rods presented the beaded appearance. The cycle seems to require from ten to twelve hours. By the addition of a 50 per cent solution of alcohol I was able to secure an agglutination of the bacilli.

On plating the bacillus, the growth appears as a grayish white. The first growth is seen on the surface within eighteen hours after inoculation of the medicine. Like the typhoid colon group of bacteria, it is decolored by Grams' method of staining. The organism does not seem to develop rapidly after the fourth or fifth day of cultivation.

The organism seems to be confined for the most part to the contents of the intestine. I have been unable to find it except in feces. Dr. T. E. Sanders, in a paper published in the March issue of the *Southern Medical Journal*, reports finding them in abundance in a large number of specimens of pellagrin feces. Dr. R. G. Rozier informs me that he has found the organism in feces of thirty-seven cases of pellagra, and has failed to find it in sixty-four healthy persons examined.

Animal inoculation experiments have not been very successful. The disease spreads rather rapidly in thickly settled communities where sanitary conditions are poor. I have known of five cases of the disease to develop in a home soon after moving close to a family in which the disease was present. Three people previously free of the bacilli soon developed the disease after admitting a pellagrin into their home. Another case seems to have developed as a result of contamination with cultures of the organism.

Should this organism be an etiological factor in pellagra, the media necessary for its growth would indicate that the diet is an essential factor in the treatment of the disease, but not in its prevention. Since the infection seems to be primarily of the food product or the intestinal contents, and not the tissues *per se*, it seems necessary that the patient be given a diet that will at least inhibit the growth of the organism and thereby lessen the production of toxin to be absorbed into the system. It has been observed that the elimination of corn bread, Irish potatoes, and sweets, especially cane syrup, is of great value to the pellagrin.

Of the drugs in common use, arsenic is of great value in improving the hæmoglobin and affecting to some extent the toxæmia. Ichthyol has a decided effect on the intestinal microscopic flora. The latter drug should be administered in gelatin-coated pills before meals, and the size of the dose should be increased.

In this brief paper it has been my purpose to emphasize the theory of intestinal intoxication resulting from infection, with the hope that others may be induced to investigate more fully along similar lines.

AN EXPERIMENTAL STUDY OF THE INTRASPINOUS METHOD OF THERAPY IN SYPHILIS OF THE NERVOUS SYSTEM.

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It is now well established that owing to the impermeability of the choroid plexuses of the ventricles of the brain, medicinal agents introduced into the blood-stream fail to reach the cerebro-spinal fluid. This can be most clearly demonstrated experimentally by the intravenous injection of vital stains such as isaminblau or trypanblau into lower animals. A rabbit, for example, whose blood and tissues have become intensely stained by trypanblau shows absolutely no staining of the spinal fluid. The spinal fluid in man likewise remains clear even in the most intense cases of jaundice. In the treatment of meningeal infections it is an entirely rational procedure, therefore, to attempt to avoid the natural protective barrier of the choroid plexuses by the intraspinous introduction of therapeutic agents.

The revival of a more hopeful interest in syphilis of the nervous system, due largely to recent therapeutic advances, has led a number of observers to attempt the direct application of antisyphilitic remedies by the subdural route. Mercury and old and new salvarsan have been employed, and methods have varied widely, from the simple direct introduction of the aqueous solutions of the remedies to the more complicated technique employed in the use of vitally salvarsanized serum. Of these methods I shall speak later. Despite the very widespread employment of the intraspinous method of treatment, our experimental knowledge of the fate of the substances thus introduced is deficient. Especially do we lack exact information as to the degree to which they penetrate the parenchyma of the brain and cord and the route of their elimination. My attention was directed to this while working with the Swift-Ellis method of intraspinous therapy, at the Rockefeller Hospital, in the treatment of tabes and meningeal syphilis. The deficiency of our experimental knowledge is particularly apparent when we consider the attempts which have been made to treat general paresis by intraspinous injections.

The opportunity presented itself some months ago of investigating this subject upon dogs, and in this communication I wish to present the results of these experiments.

It is impossible to trace the course of such a substance as salvarsan when injected subdurally into dogs, because of our lack of any microchemical technique for rendering salvarsan visible in histological prepa-

rations. In order to trace the paths followed by a substance introduced into the spinal fluid, a pigment should be used which will retain its color even when absorbed into the tissues, and one that can be fixed *in situ* for microscopic study. Some years ago, while working with vital staining substances in the laboratory of Professor Mesnil at the Pasteur Institute, Paris, a chemical substance was employed which seemed admirably adapted to the present study. This is the dye "Trypanblau." When injected intravenously it is almost devoid of toxic properties, but it is readily absorbed by many types of cells in the body, producing the remarkable effect of vital staining. This dye was employed in a large series of rats, mice, and rabbits, and no toxic effects were observed beyond a transient rise of temperature, even when large quantities were injected.[1] The animals showed invariably no staining of the spinal fluid, though the blood and tissues were intensely stained.

Two young dogs were selected for the first experiment, and into each 2 cc. of a 0.5 per cent solution in normal saline of trypanblau were injected subdurally. The injection proved extremely irritating, the animals showing such violent evidences of extreme meningeal irritation that one was sacrificed at once and the other reanesthetized and allowed to remain alive for half an hour; upon regaining consciousness, he seemed in great distress, and both hind legs were paralyzed. He was killed at once, and the brains and cords of both animals were removed for histologic examination. The details of the histological studies of all the animals used in the various experiments will be considered presently. Very much weaker solutions of trypanblau were now used for injection, but it was soon apparent that a solution so weak as to cause only slight meningeal irritation likewise failed to stain the tissues sufficiently along its path of absorption, and was therefore valueless.

The query naturally arose, Why should trypanblau be devoid of toxic features when injected intravenously, but extremely irritating and toxic when introduced into the spinal fluid? It seemed probable that the well-known collodial protective properties of the blood serum furnished the explanation. Accordingly, in the next series of experiments a 1 per cent solution of trypanblau in saline diluted one-half with rabbit-blood serum was used for subdural injections. A solution of trypanblau was thus employed which was identical with that used in the former experiment, but which contained blood serum.

Three young dogs were now given each 2 cc. of this mixture intraspinously. They all recovered from the anesthetic without giving any evidences of meningeal irritation whatsoever, and remained in apparently normal condition until they were sacrificed for histological examinations of the central nervous system, one, two, and four hours later.

The anatomical and histological study of the central nervous system of the animals injected subdurally with trypanblau was very instructive. In animals killed one hour after the injection of 2 cc. of the trypanblau-serum mixture the meninges of the cord were found to be diffusely stained dark blue. The stain could be traced to the base of the brain, from whence it had spread laterally for a short distance upon the temporal lobes. The convexity of the brain was free from the stain. Anteriorly it had completely impregnated the sheathes of the optic nerves and had extended over the scleræ to the limbus. Furthermore, the stain could be traced into the nasal cavity, having reached this point by the way of the well-known lymphatic connections between the nose and the arachnoid spaces of the brain. As the spinal nerves were severed in removing the cord, they were seen to be injected within the stain, and upon careful dissection the stain was found to have penetrated quite to the dorsal ganglia of the posterior roots. All the cranial nerves were likewise deeply stained. It will thus be seen that in dogs the entire cord, base of the brain, and spinal and cranial nerves can easily be reached by means of intraspinous injections of relatively small amounts of fluid.

Dogs sacrificed two and four hours after injection showed a very similar picture to that described, except that the cerebral hemispheres were stained a little more upon the convexity than in the dog killed after one hour. In no instance, however, was the convexity of the brain stained up to the median line, the stain reaching only a short distance upon the surface of the temporal lobes. This observation would seem to have some bearing upon the intraspinous treatment of paresis, for in this disease it is the cerebral hemisphere especially that one wishes to bring into contact with the material injected.

With this in mind, two dogs were next injected through a trephine opening with 2 cc. of the trypanblau-serum mixture directly into the lateral ventricles of the brain. This was a severe test of the detoxifying power of blood serum for trypanblau, for when upon another animal a 0.5 per cent solution of trypanblau in saline was injected into the lateral ventricle the animal died promptly with convulsions and respiratory failure. With the trypanblau-serum mixture, however, there were no untoward symptoms, the animals recovering from the anesthetic quite normally. Upon removing the brain and cord of one of these animals forty minutes after ventricular injection, quite a different picture was seen from that present after intraspinous injection. The pia-arachnoid spaces of both hemispheres were deeply stained quite to the median line, and the base of the brain and upper half of the cord were likewise deeply tinged. As a means of applying therapeutic sera directly to the cerebral hemispheres the intraventricular route is far superior to the spinal.

Having demonstrated that the pia-arachnoid spaces of the brain and cord can readily be injected with serum, even to their terminations upon the cranial and spinal nerves, the very important question remained as to whether the parenchyma of the cord and brain had been reached by the stain.

Numerous frozen sections were made from various parts of the cord and brain of each experimental animal, and paraffin sections were likewise made, using 10 per cent formol as a fixative. From a microscopic study of the sections one may briefly say that in the dogs who received the trypanblau-serum injections there was in no instance any evidence of the stain having penetrated into the brain substance proper. The meninges, pial-septa, and blood-vessel sheathes were diffusely stained, but the parenchyma itself remained untinged.

The only instances in which the parenchyma was stained were in the animals receiving trypanblau dissolved in saline and without the addition of serum. These animals, it will be recalled, exhibited signs of intense meningeal irritation following the intraspinous injections, and some developed paralysis of the hind legs. In the latter the lumbar region of the cord was intensely stained, and the stain had penetrated the parenchyma, coloring the motor-horn cells in many places. Such staining, however, means unquestionably the serious injury or death of the nerve cells, and this was shown clinically by the paralysis observed in the animals before death. Here again we encounter additional evidence of the extreme danger attending the subdural injection of a toxic substance without the protective action of blood serum.

The experiments which have just been detailed prove in a very conclusive manner the protective power of blood serum for a highly toxic substance injected intraspinously, and the analogy between the action of trypanblau under the conditions described and that of salvarsan and neosalvarsan under similar experimental conditions is so striking that it seems worth while to discuss critically at this point the various methods which have been employed in the intraspinous use of the salvarsan preparations.

Because of the ease with which neo-salvarsan can be brought into solution it has been employed for direct subdural injection, but the results have not been at all encouraging. Isotonic salt solution was used as a vehicle by Ravaut[2] and the later by Lorenz[3] and others. They report rather violent root pains and frequently impairment of the sexual and bladder functions following the injections. The opinion of workers in this field seems almost unanimously against this technique.

The use of blood serum salvarsanized *in vivo* has been thoroughly tested by Swift and Ellis[5] and many others[4, 6], and the results are gener-

ally conceded to be favorable in certain cases. It has been objected, however, that with the Swift-Ellis technique only infinitesimal quantities of salvarsan are injected, and that it is impossible to determine or vary the dosage. To overcome these objections, and at the same time simplify the technique, others have used human serum as a vehicle and have added salvarsan and neo-salvarsan in measured quantities to the serum. This would theoretically seem to be the ideal method, and its rationality is certainly supported by my experiments on dogs, as reported in this paper. Marinesco and Minea[7] saw distressing symptoms develop, however, when neo-salvarsan was added to the serum in dosage of from 6 to 12 milligrams and the mixture heated to 37° Cent. for 45 minutes. Neo-salvarsan, however, because of its recognized instability, should never be heated in this manner. It is not so favorable a substance to employ as is salvarsan, which is more stable. Ehrlich's newest preparation, sodium salvarsan, should, from its properties as described by German authors[8], be an ideal preparation for intraspinous therapy, since it combines a high degree of solubility with great stability. It is said to be equally as efficacious as old salvarsan.

Ogilvie[4] has shown recently that salvarsan, mixed with human serum, can be injected subdurally in increasing dosage, beginning with 0.5 of a milligram and increasing the dose to as much as 3 milligrams, without the advent of any serious reactions. This would seem to be the method of choice, and my own experiments lead me to believe that the use of human serum as a vehicle for the salvarsan is absolutely essential. Warfield[9] advocates the use of mixtures of neo-salvarsan and spinal fluid for intraspinous injections, but, while the method is convenient and easy, it cannot in the face of the evidence at hand be regarded as a safe procedure.

From the gradually accumulated evidence of many observers it has become apparent that salvarsan and neo-salvarsan are highly deleterious in their action on the nervous system when injected intraspinously without serum, and that this toxic harmful action can be inhibited within certain limits of dosage if human serum can be used as a vehicle for the salvarsan. In the intraspinous treatment of syphilis of the nervous system it is the safer procedure to begin treatment by one or two injections according to the Swift-Ellis technique, and to continue treatment by adding salvarsan in progressively graded dosage directly to the human serum used for injection.

Several physicians have attempted to treat syphilis of the nervous system by intraspinous injection of some form of mercury, but with small success, due apparently to improper technique. Byrnes[10] has recently

succeeded in devising a method whereby a solution of mercury albuminate in blood serum is used for intraspinous treatment. The technique is not difficult, and the method marks a distinct advance in this type of therapy. It would seem to be especially indicated in certain cases which either have given Herxheimer reactions or in which there is a danger of such a localized reaction.

In concluding, let me emphasize the frequency with which the central nervous system is involved in syphilis. The researches of Ravaut, Wile,[11] and others have shown the percentage of nervous system involvement to be as high as 65 in secondary syphilis; and it is at this time, when the spirochætes are in the blood in large numbers, that the nervous system receives the infection which later may cause such serious damage. Every syphilitic should be studied thoroughly from the standpoint of possible nervous system involved.

Owing to the researches of American physicians, we now have safe and reliable methods for treating syphilis of the nervous system, with both salvarsan and mercury, and the results of intraspinous therapy have converted types of disease formerly regarded with the utmost pessimism into hopeful therapeutic risks.

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THE NASAL SEPTUM.

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For the past six years I have given special study to diseases of the nose and its accessory sinuses. It is to me a most fascinating field for study. I have found in my limited experience that the nasal septum is responsible for far more pain and suffering than the casual observer would think possible. This little apparently insignificant partition

whose service is to divide the nose into two cavities is very simple in its anatomical structure, being composed of several pieces of cartilage and bone which are covered with mucous membrane. It is well supplied with nerves and blood vessels. Its bony structure is composed of the perpendicular plate of the ethmoid bone; second, the triangular cartilage, and, third, the vomer. These different bony and cartilaginous structures are enveloped, first, by perichondrium; second, by mucous membrane. Running through this mucous membrane are the nerves and blood vessels which innervate and nourish the septum.

BLOOD SUPPLY.

The septum receives its principal blood supply from the naso-palatine artery, the remaining supply being furnished by the septal artery and the anterior and posterior ethmoidal arteries.

NERVES OF THE SEPTUM.

The nerve supply of the septum is, first, nerves of special sensation, viz., the olfactory nerves which spring from the olfactory bulb and go to the upper back portion of the septum. Second, the sympathetic nerves, viz., the sphenopalatine ganglion of the sympathetic nervous system which gives off a branch to the septum. Third, the nerves of general sensation, viz., the nasal branch of the fifth, the superior nasal branch of Meckel's ganglion, and the naso-palatine branch of Meckel's ganglion which gives off a branch that passes through the anterior palatine canal and is distributed to the incisor teeth. Hence the dead feeling of the front teeth when the septum is cocainized. With this brief and imperfect description of the anatomy of the nasal septum, I shall enumerate a few of the signs, symptoms, and effects due to septal origin.

SYMPTOMS.

Inability to breathe through the nose, alteration in the voice, a characteristic facial expression, the presence of a continuous discharge from the nose or at the back of the throat, redness and swelling around alæ nasi, headache, nasal itching, vertigo, inability to fix attention, impaired general health, poor development, deformity of the chest, hypochondriasis, melancholia, shallow breathing, elongation of the uvula, spasmodic cough, asthma, aphonia, night sweats, nightmares, distressing dreams, snoring, constant or oft recurring catarrh of the pharynx, larynx, and bronchi, restlessness, twitchings and even convulsions, frequent sneezing, perversions of the sense of smell and taste, deafness, sali-

vation, eye strains, stammering, stuttering, nocturnal enuresis, epilepsy, chorea, dyspepsia, gastralgia, palpitation of the heart, muscular rheumatism, frontal headaches, a dull heavy feeling in the eyes and cheeks, pain in the eyes, a stuffy feeling in the nose and head, inability to breathe comfortably, tinnitus aurim, eustachian catarrh, chronic eczema of the alæ nasi and upper lip, recurrent bronchitis.

It has been said that the patient consults the rhinologist not for the septal deformity *per se,* but for the conditions which have produced the unequal ingress and egress of air through the nose, such as hypertrophies, contact, insufficient drainage, which is a most patent factor in producing infections of the accessory sinuses of the nose.

ETIOLOGY.

The causes of septal deformities are external trauma, congenital deformities, arrest or excessive development of the facial bones. The high arch of the palate is a frequent cause, and it has been recently claimed that the cutting of the permanent teeth is a frequent cause. The most common cause is external trauma.

Dr. Tousey, in his article entitled "X-Ray Prevention of Nasal Diseases," says:

"It often happens that a set of permanent teeth develop in a jaw which is not nearly wide enough to accommodate them. The most obvious result is that the permanent teeth are variously malpositioned and delayed in eruption. But of more vital consequence is the interference with the development of the superior maxillary bones. The hard palate has a narrower base than natural and is bent up into an unnaturally high arch. This presses up the nasal septum, then in a cartilaginous or formative state, and crumples it into spurs and deviations which in later life are bony and cause a train of symptoms and operations."

The above quotation from Dr. Tousey impressed me with its sound reasons for septal deviations, and was entirely a new idea to me. I feel quite sure should the X-ray be used at the proper time, about the 5th or 6th year, which would then show the unerupted permanent teeth, and the proper treatment dentally executed, it would be a great benefit to many a helpless sufferer. I will give briefly the histories of a few cases I have operated on. I do not claim for them that they are an average, but they are extremes.

Case No. 1. Male, age 40: Had been a sufferer with frequent attacks of headache, was always complaining of catarrh of the head; could not breathe freely through his nose; was a chronic dyspeptic; was treated

for eight or ten years by his family physician and was finally referred to me, the doctor telling me he could not cure him, and maybe if I would operate on his nose his other symptoms might improve. Upon examination I found a marked angular deflection of the septum, which was difficult to operate on. I did the submucous resection and the results were good. He was back at his stable trading horses the third day after the operation and it was with much difficulty that I could get him to my office for any after-treatment. He was relieved of all of his symptoms, even his indigestion was cured, and when I was leaving Lincolnton he wanted to give me a testimonial relating what wonderful benefits he had received from the operation.

Case No. 2. Male, age 40: Complained of a heavy feeling in his head; could not concentrate his mind on what he was doing; failed to grasp the meaning of an ordinary conversation; could not breathe comfortably through his nose; thought he had heart trouble; was peevish and irritable in disposition, making home life unpleasant. Examination revealed a slightly enlarged middle turbinate on left side, a moderately deflected septum with the convexity against the swollen turbinate and a decided septal ridge on the floor of the nose. The septum was operated upon, doing the usual submucous resection, but on severing the bony ridge on the floor of the nose a profuse hemorrhage occurred which I never could control enough to remove the severed bone; therefore I packed the nose unusually tight, packing both nares as uniformly as I could, which forced the severed bone in line, thereby straightening the septum. Healing was rapid and uneventful. All his train of unpleasant symptoms disappeared with rapidity. His wife was in my office Monday, March 27th, and reported to me that I had changed a cross, peevish husband into a kind, considerate and lovable one.

Case No. 3. Male, age 33—employment, railroading. Came to our office because of rapid failure in hearing; had some tinnitus. Both ear drums were depressed. Upon testing his hearing, we found right ear by Schwartz test (air conduction 5 seconds, bone conduction 10 seconds). Left ear, air 22 seconds, bone 10 seconds. Right ear not improved by politzer; left ear increased from 3 feet to 9 feet. Right ear heard 10-foot watch only by contact; left ear before any treatment 3 feet, after politzer 9 feet. Upon examining nose, we found badly deflected septum to right, so much so it was impossible to use eustachian catheter. The usual submucous resection was done. His mucous membrane was the thickest I ever saw. The final results were a straight nose with good breathing space on each side. No catarrh, and with a very few inflations and massages his hearing returned to normal.

It is not my intention to convey the impression that all deflected septums cause symptoms, for such is not the case. It is often the case that badly deflected septums produce no abnormal symptoms, and when such cases come in my care I never advise operative interference. I have frequently quoted to such patients the old adage, "Never trouble trouble until trouble troubles you."

TREATMENT.

Under this head I am sure that any sort of compromise or partial removal is as disastrous as is half-size doses of antitoxin in diphtheria. I am firmly convinced that a complete removal of the entire bony and cartilaginous septum is always the proper course to pursue, with special attention to removing all the upper margin, as a small cleft from the roof of the nose can cause the membrane to project to one side and thereby fail to give the results desired; also a ridge on the floor of the nose can do the same thing, and the latter is by far the most difficult part of the operation to perform.

I am influenced more by the symptoms and position of the deviation than by the amount of the deflection. A case with only a slight deviation with a train of symptoms not attributable to other causes, especially when there is pressure in the region of Ballenger's vicious circle or beginning deafness, etc., I advise a complete septal resection. On the other hand, a badly deflected septum with mild or no symptoms, operative interference is not advised.

Method of Operation.—Patient is placed in semi-sitting position, nares cocainized with cotton pledgets dipped in adrenalin and then into crystals of cocaine, then rubbed over the entire septum. When thoroughly cocainized by frequent applications, I then inject a one-fifth of 1 per cent solution of cocaine, with a few drops of adrenalin added to it, on the left side of septum at point where incision is to be made, trying to get it just beneath the mucous membrane. I then make a vertical incision through the mucous membrane and perichondrium extending from roof of nose to the floor, and when the floor is reached I extend the incision a short distance backward. This incision is made with a sharp mucous membrane elevator, and not a knife; the left forefinger being in the right nares as a guide during the entire cutting. The mucous membrane is then elevated as far back as is practicable, then the cartilage is cut through with the same instrument and in the same place and manner as the mucous membrane, with left forefinger in right nares as guide, being very careful not to cut through the mucous membrane on right side. The elevator is then worked through the cartilaginous in-

cision with a stroking motion from above, down, and out, until the mucous membrane is severed from the cartilage and bone as far back as is practicable. Then the hard structure is bit off piece by piece with Hurd's biting forceps. After all is removed, I then examine each side of the nose to see if all contact is obviated, and then both sides of the nose are loosely packed with strips of bismuth gauze, which is left in nose for forty-eight hours. Packing is then removed, nose douched with warm saline solution and sterile white vaseline squeezed in both nares. This treatment is kept up once a day for a week, when patient is discharged. A spray of Dobell's solution and menthol, camphor, and oil of cinnamon in benzoidol, to be used for the next two weeks, is prescribed.

ASTHMA CAUSED BY NASAL CONDITIONS.

By E. Reid Russell, M.D., F.A.C.S., Asheville.

This disease is due in all its forms to interference with the free entrance and exit of the air to and from the lungs, and this depends upon a spasm of the muscular fibers in the walls of the bronchial tubes. It is also said to be due to a sudden swelling or hyperæmia of the bronchial mucous membrane. The spasm is caused by a neurosis of the vagus nerve, as pointed out by Longet, Williams, and others, while the swelling of the mucous membrane has been seen by Stoerk. These two conditions are explained by the fact that the vagus nerves govern the muscular fibers as well as the blood vessels of the bronchial tubes. Gastric, dyspeptic, or intestinal asthma comes from indigestion, and is caused by irritation of the afferent filaments of the vagus in the walls of the stomach and intestines, in this way setting up a reflex contraction and hyperæmia of the bronchial tubes. In the same way we see hypertrophies of certain parts of the nasal chambers or abnormal condition of the nasal mucous membranes causing an asthmatic attack. In the study of the subject of this paper only the nose, nasopharynx, and accessory sinus, together with their operation, will be considered; at the same time diseases of the oropharynx must not be forgotten, especially diseased tonsils. About forty-five years ago Voltolini discovered that the removal of a polypi from the nose of a patient who was subject to attacks of asthma relieved him of the attacks, but with the return of the polypi the asthma returned. But it remained for Dixon and Brodie to clear up this condition in their experiments on the pathology of asthma, which shows the constricting

and dilating of the involuntary muscle fiber of the small bronchial tube by stimulating the vagus. This proved that the vagus nerve was the motor nerve of this involuntary muscle fiber, and when this nerve was stimulated the amount of air going to and from a lobe of the lung was diminished, and if the bronchial muscle was caused to contract by use of muscarine or pilocarpine, the stimulation of the vagus caused a dilation of the bronchus. The sympathetic had been shown previously that it had no control over the bronchus, showing that it had neither dilating nor contracting fibers. They found that there was paralysis of the nerve endings; of the vagus, if *profound,* general anesthesia was used; so a very small amount was necessary, and if the animal was decerebrated, keeping the medulla intact, there was no bronchial reflex from the sensory cutaneous nerves of the stomach, intestines, or cornea. The most important reflex is from the nasal mucous membranes. Section of the vagus abolished the result. The upper and posterior part of the nasal septum was the best area for the reflexes. They observed that the reflex was small unless the animal was decerebrated, showing that the higher cerebral centers diminished the reflex in the lower animals, or that the hemispheres held the inhibiting nasal reflex. In other words, the asthmatic subject has some cerebral peculiarities—may be inherited or not—which prevent the normal inhibitive influences of the hemispheres on the nasal reflexes. The nasal nerves that transmit the stimulus, to complete the reflex arc, are the first and second branches of the trigeminus, nasal branches from the sphenopalatine ganglion, and the olfactory, distributed as follows: From the first branch of the third nerve, the distribution is to the anterior portion of the nose and septum, the anterior ethmoid cells and the frontal sinus. The second branch to the floor of the nose and the maxillary antrum. The posterior region of the nose, the septum, the posterior ethmoid cells, and the sphenoid sinus are from branches from the sphenopalatine ganglion. Brumm states that the olfactory nerve is very limited in its distribution, only found in the roof of the nasal cavity, and extending only over the superior turbinate, and a like distance on the septum. The special points in the nose from which the reflex is most likely to start are not easy to locate. Some experimenters, as Spiess, think they are the tuberculum septi, which Kayser calls sexual points, the irritation of which at times may cause dysmenorrhea, and this is relieved at once by the use of cocaine to the nose.

The means of correction of conditions that have been followed by relief from bronchial asthma are many. The removal of a polypus was first, then it was found that the pressure on the sensitive points in one predisposed might cause an attack, such as a bent septum, enlarged turbi-

nates, septal spurs, and inflammation of the accessory sinuses. Abbott of Cleveland has reported several cases of accessory sinusitis with asthma which were relieved by operation on the sinuses, or the treatment of same. He also found that where the asthma returned there was a return of the sinusitis. Dr. Dudley of Los Angeles reports the case of a slate worker who was relieved of a severe bronchial asthma, after the removal of a rhinolith or a coating inside the nasal space of slate dust. The removal of adenoids from the post-nasal space has relieved asthmatic attacks. The olfactory nerve has been the cause of many cases of asthma, this showing another reflex cause. Examples of this are the emanations from the horse and the odor of certain flowers. Anaphylaxis, or where pus remains in cavities of the sinuses, has been discussed, and Justus Mathews has the following to say:

"It has been proved experimentally that in hay fever, and the asthma that accompanies it, on the introduction of small quantities of toxalbumen of pollen into the blood of an individual subject to those affections, the symptoms of hay fever and hay asthma appear, while in the normal person no reaction occurs. The same has been found true of emanations from animals in those cases sensitive to them. The sensitization has taken place by previous entrance of a foreign proteid into the blood by heredity, which is an active factor in both asthma and anaphylaxis. It has been found that a foreign proteid capable of sensitizing the person and later producing the anaphylactic shock may result from autolysis or self-ingestion of inflammatory motory exudates, necrotic material, within the living body; as of retained placenta or other tissue. The retained purulent discharges found in the nostrils or accessory sinuses would point to the site of the entrance into the blood of proteid that would cause the anaphylactic reaction. The reaction has been produced experimentally in guinea pigs by the inhalation of animal emanations followed by the injection of serum from animals of the same species."

As to the frequency of nasal complications in asthma, Lubinski observed in a series of 500 cases of asthma there were nasal changes in 143, while Becker, in 649 cases of nasal polypus, found asthma in 47. Frankel in 32 cases of chronic rhinitis found asthma in about one-third. Another group showed either an aggravation of the attack in the interval or, as in the case of Schmiegelow, caused the first attack of asthma following nasal treatment. Dundos Grant mentions a case where the insufflation of starch and nitrate of silver set up an attack, and another attack was set up by the application of chromic acid to the septum.

Where we find nasal disease present, the coincidence of asthma is another strong indication for operation. There are many failures to relieve asthma, due to the obstinate nature of the nasal disease. The nasal conditions that are now recognized as factors in the bringing about

of asthma are as follows: polypi, deflected septa, hay fever, enlarged turbinates, intumescent rhinitis, septal spurs, inflammation of accessory sinuses, foreign bodies in the nose, as rhinoliths, sensitive olfactory nerve, especially for certain odors, and adenoids.

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THE DIAGNOSTIC VALUE OF HEADACHES, GENERAL HEADACHES, SUN PAINS, NOCTURNAL PAINS AND LOCAL HEADACHES, TO THE GENERAL PRACTITIONER.

W. P. Reaves, Greensboro, N. C.

In taking up and writing this paper I have done it more from the standpoint of the general practitioner. In dealing with cases it is necessary to treat internally or be referred for special treatment, and going over such a broad field, I have had to limit myself to making very definite suggestions instead of discussing the conditions upon which these diagnostic points depend.

All forms of headaches are found in the region of the fifth nerve, with few exceptions. The upper cervical nerve headaches are either general or local. General headaches are usually due to a systemic cause, febrile diseases, anemia, vasomotor disturbances, syphilis, nephritis, diabetes and auto-intoxications. These are the ones that the family physician comes in contact with every day, and should be studied very carefully and be treated medicinally, and the results will be gratifying to the physician and patient. On the other hand, local headaches, sun pains, neuralgia, neuroses, ticdoulereaux will be equally disappointing to both physician and patient if treated medicinally. These local headaches are external to the cranium anterior and below the hair of the scalp, found in people apparently in health, free from pain a part or most of the time, not considered serious, but an inconvenience believed to be heredi-

tary or the result of some indiscretion of their habits. Treated by purgatives, tonics, or soda-fountain dope which today are making many neurasthenics out of our young girls!

The first question the physician should ask *himself*, and not the patient: Is it from a systemic or a local cause? Then by a process of elimination he may classify the cause. If systemic from some acute disease, the headache will disappear with the disease. If systemic from any of these diseases, as diabetes, nephritis, syphilis, malaria, or intestinal auto-intoxication, it will be necessary to find or eliminate the cause. Diabetes and nephritis by urinalysis, syphilis by a Wasserman and clinical finding, malaria by the microscope, and auto-intoxication by the acuity of his diagnostic ability. Every case of obscure headache should have the blood pressure taken. I have never seen a case with a blood pressure 30 below what it should be for his or her age that did not have headaches, and 50 above normal is nearly always associated with headaches. This is the time to treat nephritis. This is the syndrome, the blood pressure rising before any albumen is found in the urine. Save your patient before it is too late.

Having gone into the case, eliminating systemic causes, with equal care then check up the local causes, and the mist that has clouded the cause of headaches will begin to clear up.

Local headaches with a local cause, with or without a periodicity, have a diagnostic value that when properly interpreted may bring joy to the heart of the sufferer with the thought that he may be able to work without suffering and be sociable and companionable with his friends.

The character, severity, locality, and periodicity of local headaches are worth a great deal in arriving at the cause of headaches. Frontal headache following reading, especially in the afternoons after several hours of study, is suggestive of eye strain, either errors of refraction or muscle unbalance. When these troubles are corrected by an oculist the patient usually gets relief. A sharp distinction should be drawn between an oculist and the pseudo-doctor, optometrist and optician, that advertises "eyes fitted without drops, cross eyes straightened without the knife." In some States there is a law prohibiting opticians from advertising and doing business under the title "doctor," which is interpreted by the laity to mean a doctor of medicine. It is a violation of the law to label oleomargarin as butter, yet our State permits men who have no medical training at all to label themselves as doctors, to sell glasses and murine, and the patients believe they are getting expert eye treatment. More than once have I seen loss of vision from optic neuritis while they were wearing glasses and using murine, believing that they had had the best

of treatment, finding out too late that they had not had the services of a physician at all, when the proper internal treatment would have saved their vision.

Sun pains should be written sinusitis, coming on after rising in the morning at a certain hour and going off before sundown at a certain hour. This periodicity of the day and hour with localized pain, although it may become general pain, is almost pathognomonic of chronic sinus trouble. The other forms that have a less typical periodicity are often seen in what are called sick headaches.

These cases are often sequelæ of an abscess tooth involving the maxillary, or grippe involving one or all of the sinuses. When one or more fail to make a spontaneous cure, and the patient is left with what he calls catarrh, and finally when he is forced to seek surgical relief, he wants to pay you in part in atomizers that he has accumulated in treating his catarrh.

Within the last few years instruments and technique for operation upon the maxillary, frontal, ethmoid and sphenoid sinuses have been so perfected that one or all of the sinuses on one side can be operated on under local anesthesia at one sitting, and by keeping the patient near the surgeon for a few hours the nose can be left unpacked, which aids draining in a field that has pus. The bleeding is an advantage, by depleting the operated field, washing away infection and pus. To pack aids absorption of pus, causes inflammation, and multiplies the after-pain of the operation. More than 95 per cent of sinus cases can be operated upon in this way.

Now compare this method with the old external operations that were formerly done by the general surgeon, scarring the patient for life, often leaving an ethmoiditis or sphenoiditis back of a frontal or maxillary that would reinfect the operated field, which now explains the many failures of relief, not to mention that the patient had to take a general anesthetic and stay in a hospital for about a week. When this is explained to a patient, many will submit to the operation, when before they would rather suffer the pain than to take an anesthetic, lose the necessary time after the operation, and have a scar on the face for life.

Nocturnal or night headaches have some diagnostic significance. First, they practically eliminate sinus trouble, with the exception of acute sinusitis that has day pains, and the day pains always predominate the night pains. The old chronic sinusitis that has developed a neurosis overshadows the sinus trouble, and the patient may have sick headaches at night, but without the sinus periodicity. Night headaches are often

found in syphilitics, and some mistake them for sinus trouble, which should not be done if they are free from pain during the day.

Pressure headaches are caused by a deviation or abnormal anatomical condition of the nose. The child may fall on the floor and mash its nose flat and dislocate the septum, as the athlete on the football ground. These conditions block one or both of the nares, and may by the continued pressure produce a neurosis of some nerve that is the cause of a neuralgia every time the person deviates from his normal habits. The cure is to remove the pressure and restore normal breathing. Neuroses are often sequelæ to chronic catarrhal or hypertrophied conditions in the nose, the results of nasal obstruction, especially adenoids in children—in short, adenoids in children and catarrh in adults.

Every case of hay fever should be carefully examined to eliminate any pressure or neurosis in the nose or sinus trouble. Asthmatics are usually nasal sufferers. At our last meeting I reported eight cases relieved or improved by nasal operations. One of the cases still has attacks, but they are less frequent and less severe. One other, although nares are clear, as she had a double ethmoidectomy, has had a return, after several months relief, in all its severity. This return and severity are attributed to a tubercular involvement of the lungs.

Headaches in women during menstruation, especially if associated with dysmenorrhea, may not be a true uterine or ovarian headache, especially when these organs are normal in every way. Most all mucous membrane becomes congested at this period, especially in the nose at the point known as the "genital spot" on the septum and middle turbinates. Should these points have become sensitive or neurotic from pressure or by hypertrophy, then the congestion and psychic condition acting upon these hypersensitive points often cause a headache that precedes the painful menstruation, and the proper treatment in the nose prevents both headache and the dysmenorrhea.

RÉSUMÉ.

The character, location, and periodicity of headaches are of much value when elicited and studied in a systematic way—systemic causes eliminated, local causes analyzed.

The physician should ask himself these questions as he interprets the history of the patient:

First. Has the patient headaches characteristic of eye strain?

Second. Has the patient headaches characteristic of sinus trouble?

Third. Has the patient headaches at night and not during the day? That tends to eliminate sinus trouble.

Fourth. Has the patient headaches with obstructive breathing characteristic of pressure with or without a neurosis?

Fifth. If the patient has hay fever it should be imperative to have the nose examined to eliminate a neurosis or a pathological condition before pumping vaccines into his system.

Sixth. The very complex chain of reflexes in headaches associated with dysmenorrhea should be carefully studied, as the patient's health and happiness depend upon both the gynecologist and the rhinologist.

Dr. P. R. Hardee, Stem: I do not wish to discuss this paper, but I want to ask Dr. Reaves a question. The information that I want to get is in regard to the blood pressure. I notice Dr. Reaves in his paper spoke about giving medicine to relieve the high blood pressure, and I would like, for my own information, to hear something about this. I find that that is a hard thing to control, and I would like to know what remedies Dr. Reaves finds best in holding the blood pressure down.

Dr. Reaves (in reply to Dr. Hardee): That is a question I intentionally avoided, because I am not sure of my therapeutics; but what I have tried to do, first, is to increase elimination. You would treat it almost as a nephritis. Of course, you would restrict meat diet. High tension nerves in daily work mean high blood pressure. The only thing that has done my patients good is bichloride, one grain to the ounce of a saturated solution of potassium iodide, ten drops after meals. Sometimes they run it up to twenty and thirty. It's the only thing from which I have gotten any permanent result. This is what I generally give, letting them take it for a month. I have had some patients on it from three to six months, and the blood pressure would gradually come back. It has been as high as 170, and has dropped to normal in the cases with no albumen in the urine. Cases that have a blood pressure less than 200 without albumen I have gotten results from. In one case a sufferer from headaches got relief for a time from glasses. His blood pressure when I saw him was 170 or 180. He weighed 200 pounds, and his height was 6 feet 2. I put him on one grain of bichloride to an ounce of saturated solution of potassium iodide, ten drops after meals. He came back in about six weeks, stuck his head in the door, and said he was glad he had found something else besides glasses to cure headache. In blood pressure that is not the result of arterio-sclerosis, with the urine free from albumen, you have to deal with an auto-intoxication, and in potassium iodide and mercury you have a remedy that will increase the elimination through every emunctory of the body.

In a few cases with an idiosyncrasy for iodides other remedies will have to be used.

Dr. Hardee: Dr. Reaves purposely evaded what to me is the gist of his paper, for I have not found it an easy matter to prescribe a remedy which will relieve high blood pressure for a considerable length of time without being injurious to the patient. I am very much interested to know that Dr. Reaves relieved this case of high blood pressure with bichloride of mercury and iodide of potash, remedies which if indexed as being vasomotor sedatives I am not cognizant of, and am certain that bichloride is not so indexed. That Dr. Reaves obtained such prompt and permanent results in this particular case with these remedies, which are a specific for some other trouble, leads one to believe that the doctor was treating primarily the patient's blood, for spirochæta, and not treating the blood pressure *per se,* knowing that when this irritant was eliminated nature would not only relieve the high blood pressure, but the pain also, for syphilis has long since been recognized as being a cause of high blood pressure, and we all know it causes pain.

A case of high blood pressure in a maiden lady 65 years old has given me a good bit of trouble for two years. When called to see this patient the first time, on my arrival her companions informed me that she had just had a very hard fit. Never having had an opportunity to test the blood pressure before an epileptic fit, I decided to test it in this case after the paroxysm, while in the comatose state, and found it 180. I at first suspected kidney trouble as cause of this condition, but found the urine negative; then, believing that I had a case of epilepsy, caused, probably, by arterio-sclerosis at base of brain, I decided to try and prevent the epileptic paroxysms by maintaining a low blood pressure. Accordingly I prescribed for this patient a mixture of Norwood's tincture V.V. and tincture aconite root. By giving about 4 doses a day it has controlled this patient's pressure very well. She soon learned by certain indescribable symptoms when an extra dose is necessary. On a few occasions when, from some cause I know not what, this failed to relieve, I have given nitroglycerin, 1-110 grain every thirty minutes. This has never failed to give relief until an increased dose of the aconite and V.V. gets its effect.

The treatment outlined above has been reasonably satisfactory in controlling the pressure, and I think in preventing epileptic paroxysms also. At any rate, her life has been tolerable. I do not believe this treatment has had the injurious effect which the bromides would have produced.

CONSERVATION OF VISION.

ECONOMICS OF THE PREVENTION OF BLINDNESS, AND THE STATE SCHOOL FOR THE BLIND.

JOHN E. RAY, SUPERINTENDENT NORTH CAROLINA STATE SCHOOL FOR THE BLIND, RALEIGH.

Mr. President and Members of the State Medical Society:

I am not unmindful of the compliment conferred and the courtesy extended me in this permission to speak in your presence upon a most vital topic. I shall seek to not impose upon your patience, nor to abuse the privilege accorded me. I am deeply grateful to you.

The subject assigned me is a very broad one, and I shall hope to touch merely upon a few of the most important phases. And let me, in the beginning, disabuse your minds of any thought that I come to *instruct* you experts. I come as a layman, after forty years association with the blind, with a message which I wish to lay upon your hearts, and to "stir up your pure minds by way of remembrance."

"Economics of the Prevention of Blindness, and the State School for the Blind."

There are three words which we hear very frequently these latter days—*"efficiency,"* in matters of education; *"proficiency,"* in the mechanical and industrial world, and *"prevention,"* in the sanitary and medical world. I am to deal meagerly with this last. I quake at the task. But since you have dealt so graciously with me these past few years, I presume.

Upon the old proverb, "An ounce of prevention is worth a pound of cure," I base my remarks. You know how much more easy it is to *prevent* than to *cure*. After blindness has occurred, the cure, in most instances, is impossible. Hence the seriousness of the proposition before us, and the immense importance of prevention.

And let me remind you that there are cases of blindness which should never have occurred, and would not, if proper preventive measures had been employed at the right time. The most prolific causes of blindness are heredity, atrophy, trachoma (in some sections of our country), accident, and ophthalmia neonatorum—baby sore eyes. Of the last two I shall speak more particularly.

And let me inject just here one brief remark. I have read only recently from the pen of a very distinguished specialist, and with no little

relief, that it has been discovered that the *gonococcus* is not alone responsible for this dreadful disease. On the other hand, another germ—there may be more—will produce the direful results. I confess to considerable relief, but to no less apprehension. Nay, more. Does not the situation call for greater care?

There are approximately 100,000 blind persons in the United States. Of this number, the blindness of fully 25 per cent is due to ophthalmia neonatorum! How appalling! In North Carolina there are more than 1,600 blind persons of all ages. The records of the State School for the Blind for the past two years show an enrollment of 388 students. Of these, 87 are congenital, 80 causes unknown, 79 from ophthalmia neonatorum, and 33 from accident. This means that more than 20 per cent are blind from ophthalmia neonatorum, and nearly 10 per cent from accident—approximately 30 per cent of all from preventable causes. Think of *30,000 needlessly blind persons* in our Nation, and more than 450 of them in our own State! And when we remember that a little care on the part of the parents in keeping from their children sharp-pointed instruments and explosives would have prevented most of the accidents, and just a little cleanliness before and after the birth of the babies, the administration of a few drops of a 1 per cent solution of silver nitrate in both eyes of the newly born child, requiring *not more than ten minutes, and costing less than 10 cents,* would have preserved the sight of practically all the others, is it not *pathetic,* not to say criminal? Who is to blame?

You all know that the prophylactic is to be had in well arranged parcels, hermetically sealed and guaranteed for several months. If it is not used within the prescribed time, it may be returned and replaced by a fresh supply.

Would it be unreasonable to ask the next General Assembly to provide all county and city health officers and midwives with the prophylactic free of charge? And will not the members of the State Medical Society do all in their power to require all persons practicing obstetrics in our State to administer this prophylactic, or something else equally effective? Such laws have been enacted recently in the States of Indiana, Kansas, New Hampshire, New York, Rhode Island, South Dakota, Tennessee, California, Connecticut, Illinois, Kentucky, and possibly others. In most of these States the birth of every child must be reported to the State Board of Health within thirty-six hours, and in some of them the physicians, or midwives, are required to answer the questions: "1. Did you administer the prophylactic? 2. If not, why not?"

The law in New York is very stringent, requiring all midwives to be licensed, and refusing to license any one who has not "attended 15 maternity cases and nursed 15 lying-in patients, under the supervision of a physician"; and even then they are allowed to be in "attendance upon normal cases only, and nursing of mother and child."

The results have been most satisfactory. At the Sloan Maternity Hospital of New York City, where preventive methods are employed, "out of 4,000 births, during a period of six years, not one case of infant ophthalmia has developed." In Michigan 19 cases were averted last year, and in Missouri 167 cases of eye trouble were cared for.

Through the good services of Drs. Carr, Kent, Capehart, and others, a bill was passed by the recent General Assembly of our State entitled "An act to prevent blindness in infancy," and is now upon our statute books. It is a very decided step in the right direction, and I commend it to your consideration and support.

I have not yet touched the first word of my subject—the "economics" of the situation. You are all aware that it is very expensive to properly educate and train the blind. The United States Commissioner of Education, Dr. Claxton, tells us in his recent report to the Government that the average "per capita cost of instruction and maintenance" of the 64 public schools for the blind in our country "was a little more than $328." ("Tell it not in Gath, publish it not in the streets of Askelon," but the legislatures of our State have appropriated less than $200 per capita for the "instruction and maintenance" of our blind students for the past eight years—in fact, less per capita than was given eighteen years ago!)

Taking this $328 per capita as a basis, you can see that it costs the State of North Carolina at least $25,000 annually to "instruct and maintain" the *needlessly blind children* in the school. In the course of ten years this amounts to a quarter of a million dollars! And this takes no account of the scores of such children in the State who never enter the school, for there are more than 200 blind children of school age within our borders who have never entered the school! And there are many, many more who are now too old to be admitted who will be a care and an expense upon their relatives, or their respective counties, so long as they live. It is impossible to calculate to what this amounts. Is it not worth considering?

Others think it worth while to prevent, and the United Steel Corporation spends a half million dollars annually for devices to prevent accidents to the eyes of its employees. The Russell Sage Foundation, too, is spending thousands of dollars annually in this work of prevention.

This enterprise is pretty well organized in the northern and some of the mid-western States, but North Carolina is the only southern State which has given much attention to the subject.

Some ten years ago one person began to study the situation, thinking little of its importance at first, because of the homogeneous and rural character of our population. He was soon amazed to find that the meager information furnished in the application blanks filed for the admission of students into the State School for the Blind showed 15 per cent of blindness from ophthalmia neonatorum. As more attention was given to the subject a much more appalling condition was manifest. He began to raise his voice at public gatherings and to write through the State press, calling attention to what existed. He has been amply rewarded by the hearty support accorded by the medical profession and the encouragement extended almost unanimously by the editors of our Commonwealth. The physicians in the General Assembly the last three sessions have wrought manfully for legal measures to aid in the work of prevention. Special mention is due Drs. Kent, Carr, Macon, and others who have been most active in this movement. Is the time not ripe for aggressive work for prevention?

The problem before our school now is to do the best that can be done for those already blind. The one pleasing phase of our work is that 85 per cent of the graduates of the school are self-supporting, self-respecting, independent citizens, making a comfortable living for themselves and their families. If the State would be more liberal in its appropriation for the maintenance of the school, we are led to the conclusion that even better results would arise. The operations are now seriously handicapped for lack of funds. I should like to enter a plea that the members of your noble profession aid us in creating a public sentiment which would result in better equipment for the solution of the serious problem confronting us.

Our State has not been cursed with trachoma as some others have been. In the mountains of Kentucky and West Virginia, as well as in parts of Ohio, there have been epidemics of this dread disease amounting to almost a scourge. Let us rejoice that our State is comparatively free from this curse.

I wanted to speak of consanguineous marriages, but time forbids. I know there is considerable divergence of opinion upon this subject, but the rather significant fact stares me in the face that there are in our school 48 white blind children, out of 274, who are the offspring of parents who are related, one of whom married his niece! Take it for what it is worth.

SAVING SIGHT—SAVING CITIZENS.

GORDON L. BERRY, FIELD SECRETARY NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS, NEW YORK, N. Y.

Mr. Chairman, Members of the Medical Society of the State of North Carolina:

I presume that many of those who make up this audience have asked themselves, when perusing this morning's program, "Why has a layman been included on the program of the State Medical Society?" And yet, on second thought, I am confident that you will agree with me when I say that many of the public health problems of today call for both *medical* and *social* treatment. Believe me when I add that we laymen who are doing the social work under the inspiration which you, as physicians, are constantly providing us, are indeed appreciative of the opportunity of telling our story to you, and I thank you for extending this courtesy to me, that I may tell you of the work, accomplished and proposed, by the National Committee for the Prevention of Blindness.

Following the loss of a Titanic, in the wake of a disaster such as more recently overtook the Lusitania, in the gloom such as pervades the world today in the contemplation of the mammoth European conflagration, we find a fervid awakening of the public conscience, with the result that there is set in motion such machinery as may tend to prevent such a recurrence of national or international disaster. As a part of such awakening there is sounded from pulpit, from lecture platform, from the highways, and by the press, the galling reminder that the disaster might have been averted had the proper preventive measures been originally adopted. Although we feel that the attitude of "I told you so" of the wiseacres is frequently overemphasized, it is in large part due to them that we find the idea of prevention—the Safety First movement—now established so firmly in the consideration of our public health and industrial problems. But the loss resulting from the sinking of a Titanic or a Lusitania, or the burning of an Iroquois Theater, sinks into insignificance when compared with the daily toll of tuberculosis and cancer, or the ravages caused by ophthalmia neonatorum, trachoma, industrial accidents, hookworm, and pellagra. And by none of these is life snuffed out in a moment or an hour or a day—but through years of suffering, of constant decrease in efficiency, the afflicted labor on until they become sooner or later a charge upon the State, some charitable institution, or their families—a derelict in all senses of the word.

It is my privilege to be with you today, as representing a National Committee which has for its objects the elimination of *certain* of those menaces to human efficiency, health and happiness mentioned heretofore—in short, those which have to do with eyesight, and as this topic is one which is to be of increasing interest in the Commonwealth of North Carolina, I am glad to have this opportunity of telling you of the endeavors of the National Committee for the Prevention of Blindness, and the possibilities for coöperative service with organized State preventive work.

It is now nearly eighty-five years since the first schools for the blind were established in the United States; it is thirty-five years since the discovery by Credè of the preventive for the disease responsible for a full 25 per cent of the enrollment in these schools for the blind; it is twenty-five years since the establishment of a committee on conservation of vision by the American Medical Association, and from the date of the formation of that committee we may say that the effective campaign for the prevention of blindness was launched. With its branch committees and its volunteer lecturers in many States, the message of prevention during the past year has been carried to audiences totaling 160,000 laymen.

But you can realize how impossible it is for any individual or organization to carry out such a vast program as is presented to the educator in preventive work, unless the entire time is given to such work, and in the realization of the need for "full-time" workers, after months of thoughtful consideration and conference with those medical authorities who had given the movement its inception, an organization of both physicians and laymen was created, whose activities might be under the inspiration and watchful care of some of America's well known oculists and other physicians, and which should work in close coöperation with such organizations as the American Medical Association. Supported financially by two of the great Foundations, as well as by public contributions, the committee finds it possible to be of frequent service to State commissions for the blind, and to any organization of workers interested in the prevention of blindness. Its objects are the investigation of the chief causes of blindness, the advocacy of the measures which shall lead to the elimination of such causes, and the dissemination of knowledge concerning all matters pertaining to the use of the eyes. I want to tell you briefly somewhat of the great need, and of what is being done in the way of prevention in other parts of our country where conditions are nearly identical with those in North Carolina.

The great need is evidenced by the fact that of the 100,000 persons in the United States who are blind, there are nearly 50 per cent who might have had their sight. Of this 100,000 there are 10,000 blind from ophthalmia neonatorum, and you as physicians know that 99 per cent of these might have been in full possession of their eyesight had the two drops of nitrate of silver, the few moments of time, the 2 cents expenditure been made at the time of birth. Again, of the 160,000 industrial accidents to the eyes occurring annually in the United States, the proportion which might be prevented is indicated by the 75 per cent reduction of accidents among its 200,000 employees by the United States Steel Corporation since its introduction of the safety committee a few years ago. That organization finds it advisable to spend $750,000 annually in its preventive campaign. Let us look for a moment at the economic side of this matter.

It costs any State approximately $300 a year to educate a blind child, as against an average cost to the State of but $30 a year to educate a sighted child. Your own State bears a heavy financial burden in educating 300 blind children at an annual expense of $72,500 as against approximately $9,000 had they their sight. It costs any State approximately $10,000 to support each dependent blind person through life. Multiplied by the number of blind in our country, we have the sum of $1,000,000,000. This divided by thirty-five years, the average duration of life of the blind, gives us $26,000,000 as the expenditure which this country will make in maintaining its present blind through their lives. Could we ask a more potent indication of the need for preventive work than that which is shown by the expense account of the department of the blind of the United States of America? On a "brass-tacks" business basis, is it not worth while to save one-half of that amount—which is needlessly expended? The proportion of that enormous sum spent to maintain those blind from ophthalmia neonatorum is being absolutely needlessly expended! It would in fact require but the expenditure of $25,000 a year to purchase and distribute a sufficient amount of nitrate of silver to protect the eyes of every one of the 2,000,000 children who are born in the United States each year.

I have said nothing about the humanitarian side of this question—the prevention of the sorrow and the tragedy caused by complete or even partial loss of eyesight. Neither physician nor layman will need to have that greatest of all reasons for preventive work brought out more completely than his own imagination will suggest. The Creator did not make the sandy shores and inlets of your eastern coast nor the green valleys, the pine-clad mountains, and the sapphire skies of your

western counties, for sightless eyes. Surely, man must do all in his power to prevent the possibility of any such disaster, any such wreckage of life, as follows in the train of blindness.

In addition to the routine measures for the prevention of infantile blindness from ophthalmia neonatorum through the use of a prophylactic, certain legal provisions are necessary. It may interest you to know that the reporting of babies' sore eyes to a physician or local health officer is compulsory in 30 States; that the reporting law is printed on the birth certificate in 5 States; that local health officers are authorized and required to secure medical attention for uncared-for cases in 11; that births are reported early enough to be of assistance in prevention of blindness work in 4; the question as to whether or not precautions were taken against ophthalmia neonatorum is included on the birth certificate in 9; the use of a prophylactic as a routine is compulsory in 10, and free prophylactic outfits are distributed to physicians and midwives in 12.

Quite evidently there is yet much for the States to do toward safeguarding the eyesight of their infant citizens, for in no State do we find that all of the desired provisions exist, while in some no preventive legislation has been enacted. But legislation does not end the matter, as you will find in your own State, and unless the provisions made statutory by your last session of the State Legislature are enforced, where is to be the advantage? There is no physician here tonight who will not, if he is not already doing so, accede to the present law's provisions; but you will have the unscrupulous physician to deal with, the untrained, ignorant midwife also, and unless the health authorities of every city and town see to the carrying out of this law, no benefit can be reaped. What enforcement of the law will do is shown by the increase in cases of ophthalmia neonatorum reported in the State of Massachusetts, where but two years ago, in spite of the reporting law, less than 100 cases were reported. Following insistence in some localities, through actual prosecution, the number of cases appearing on the health records for the year 1914 leaped to over 2,700.

I mentioned, a moment ago, the midwives; and in every State where the prevention of blindness is sought it will be found necessary to deal with this question. Forty per cent of the births in this country are attended by midwives. The majority of these women are, as you know, dirty, ignorant, and generally unfit to assume the care of mothers and babies. With our great foreign population accustomed to attendance at such times by women, with the existing poverty which cannot secure competent medical attention, we must not expect to eliminate the mid-

wife; but we *may* look forward to and work towards the time when her services shall not be followed by the harvest of disease, malformity, or death now so frequently the case. If midwives are practicing in any community, would it not be advisable to have them registered by an official body, adequately trained, examined, and licensed? In connection with every hospital could not there be a short course of training such as has already proven feasible at Bellevue, so that the midwife graduate can give clean, careful nursing care to mother and child, and instruction to the mother concerning hygiene of pregnancy and care of her child? Already in many communities the State or city departments of health have adopted rules regulating midwives' practice in detail and requiring them to summon a physician in all but normal cases. Inspectors enforce these rules, and give helpful advice to the midwives.

And now, crossing the threshold from infancy to childhood, let us look at a few of the hazards to eyesight, inattention to which is responsible in no small part for the necessity of sending many of the little folks who annually enroll in the schools for the blind. Accidents at play, or through carelessness as a result of the use of toy pistols, air rifles, sharp-pointed scissors, tools, etc., are reported each day, and until recent years Fourth of July accidents added largely to the number of needlessly blind children. Fortunately, we have devised saner forms of patriotism, and accidents to the eyes from that source are rapidly decreasing. To prevent loss of eyesight from this source, education is the chief means. We must educate not only the child, but the parent as well, and that is being accomplished by public lectures to parent-teachers associations, clubs, churches, and in the schools themselves.

I shall not do more than mention the possibilities of loss of sight following measles, scarlet fever, and other diseases of childhood, although the consideration of these is necessary by every association interested in this kind of preventive work; but there are causes responsible for so much more of the blindness in our country that I feel it more essential to stress these others rather than attempt to include all.

Before leaving the hazards to eyesight of children, let me mention the great preventive possibilities that lie in the annual examination of school children's eyes. Of the 20,000,000 children in attendance at our public schools it is estimated that from 12 to 20 per cent are in need of medical attention. Eyes that are near-sighted in the early years of childhood become increasingly so as the upper grades are reached, unless attention has been secured. Consequently at the time of graduation the child is, because of his poor sight, barred from those occupations in which it is not permissible to wear glasses, and his weakened eyes are predisposed

to various diseases injurious to vision. The teacher is usually the first to notice any defect, and in many of our public schools it is now the custom to test the vision of all pupils periodically. Through the use of the Snellen charts nearsightedness is discovered while it is still of low degree. It is essential that classrooms be adequately and properly lighted, that the tops of desks and blackboards and pages of text-books be lusterless, in order to secure the best conditions for the students of today. The haziness and cloudy effect of the slide I show is not the result of improper focus of my stereopticon, but is a faithful representation of how a blackboard looks to the many children whose eyes are in need of treatment. I have said that the initial examination of eyes might be made by the teacher, and in a great many schools this has worked out admirably. Where a full-time medical examiner cannot be provided, it relieves the part-time physician of the necessity of examining the 80 per cent of those whose eyesight is normal. After examination by the teacher, those who are in need of expert examination are sent to the school inspector, and if treatment is needed a notice to that effect is dispatched to the parents, who are urged to secure immediate medical attention for the child. Unfortunately, there is a large percentage of the parents who will not appreciate the need, or who will be desultory about securing prompt treatment, and it is to meet this need that many communities have provided a school nurse, whose duties are in large part the follow-up work in the homes, impressing upon the parents the need, and instructing them in the a b c's of precautionary knowledge. The final step is the establishment of a school clinic, where those who are too poor to pay for treatment may be helped gratis. I know of no better example of successful accomplishment in this line than that provided by the city of Nashville, where three medical examiners are constantly watching over the health of the children, where a school nurse, paid by the city, does the necessary follow-up work, and where within the past three months a well-equipped school clinic has been opened, with departments attended by Nashville's leading specialists, and in which, during its first two months of operation, more than 250 children received treatment that would otherwise have been omitted on account of inability to pay even a small fee.

Another great and increasing menace to eyesight, one which has become each year more prevalent in certain portions of our country, is trachoma. As an indication of the hold it has already secured, I cite the estimate of Dr. John McMullen, surgeon in charge of the Public Health Service work in Kentucky and the Virginias, who recently put the number of those having trachoma in the State of Kentucky at 33,000. Dr.

Murphy of the Indian Service advises me that fully 20 per cent of the remaining 275,000 American Indians are afflicted with this disease. In the knowledge that the trachomatous are in all cases in close proximity to those with well eyes, and considering the great communicability of trachoma in certain of its stages, we find a fertile field of preventive effort opened at once. Although the recent report of Dr. Foster of the Public Health Service, following his survey of the prevalence of trachoma in the mountain sections of North Carolina, showed only 33 out of 10,000 persons examined as being afflicted with trachoma, this does not in any way mean that a few years hence conditions might not be growing rapidly towards those which now exist in your neighboring States, unless barriers to the spread of this disease are put up at once. It is safe to say that 75 per cent of those having trachoma would become totally blind unless treatment were afforded, and even so, in advanced stages of the disease, where symblepharon, pannus, or any of the well known sequelæ are in evidence, it is almost hopeless to attempt to restore normal vision.

Let us look at a few of the causes, effects and opportunities for service in this department of preventive work.

I lately spent a number of weeks in Kentucky and Tennessee with Dr. McMullen, visiting the Government hospitals for the treatment of trachoma, and also seeing conditions responsible for its prevalence. In the absence of roads, we took to the creek-beds and it scarcely seemed believable that in this wonderful country, duplicated by your own western mountain counties, there could be found such conditions as we know are in existence. Lack of proper means of sanitation is undoubtedly chiefly responsible for the spread of the disease. In some of the homes there are no windows, on the inside no plaster, and only one or two rooms, in which the entire family, numbering perhaps from five to twenty, must live. With improper and insufficient food, paucity of clothing, what could provide a better prospect for typhoid, hookworm, pellagra, and trachoma? Frequently an entire family makes use of one towel, or a common wash basin; children with sore eyes use the same bed as those not yet afflicted; the same tools are handled by all. Those are the ways trachoma spreads. In the schools common handling of books or playthings has made it necessary to segregate the trachomatous from the other children until treatment has done away with the possibility of spreading the infection. Trachoma is no respecter of persons—the little chap shown here is recently home from the hospital, where they "put him to sleep" and, after the gratage operation had removed the granulations, he was sent back to the same conditions which originally were

responsible for his having the disease. This old battle-scarred veteran walked in 15 miles to the hospital at Jackson with his right eye so infected, the adhesions so severe, that at best only partial help could be afforded.

These illustrations give but the briefest indication of the great need that has existed in many portions of our country, and I can point to no better way for the control and eradication of trachoma than to refer to the splendid work of the Government through its establishment of trachoma hospitals in the heart of the neediest sections. The main difficulties encountered are the chronic nature of the disease, the widespread infection, and the disadvantages of the conditions under which the work must necessarily be done. The problem has been considered under two heads: (1) Prevention and (2) Eradication. The first is practically synonymous with *education,* which has been carried on by means of lectures and talks on health and sanitation, and by the follow-up work done in the homes by the nurses and surgeons. Thousands of leaflets telling the story of prevention in plain language have been mailed and distributed, and the coöperation of teachers and ministers secured in many sections.

It must be borne in mind that this is largely demonstration work on the part of the Federal Government, and there is no intention of taking over a burden, financial and otherwise, that belongs to the State and community. Furthermore, let me say that in Kentucky trachoma is not, as is popularly supposed, confined to the eastern mountain sections. It is prevalent to considerable degree in all sections of the State, and examination of the eyes of the children in many of the public schools discloses from 3 to 7 per cent of the children as infected.

In the West eight Government specialists and over two hundred general practitioners are attempting to achieve its eradication among the Indians, in their schools and on the reservations. We have outcroppings of it among the foreign workmen in the mills and factories of Ohio and Pennsylvania, as well as in the East, all of which places are contiguous to places already infected. It must be dealt with now, and firmly, if we are to check its spread.

It is becoming more generally known that wood alcohol is another of the increasingly important causes of blindness—and frequently death, as well. During recent years there have been a sufficient number of striking examples of both to make it more than a matter of passing comment. In Hungary some sixty men and women, who were celebrating, drank a beverage in which wood alcohol had been used instead of grain alcohol, and within twenty-four hours the entire number had died. A year ago,

in Vermont, fourteen were killed and a number of persons permanently blinded through drinking whiskey containing wood alcohol, which when received from the distillery had been labeled "Col. spirits"—meaning, of course, to the distillery, "Columbian spirits," but (through the abbreviation) being taken by the purchaser to indicate "Cologne spirits," a trade name for grain alcohol. During the past year there have been six deaths and five cases of blindness in New York City from wood alcohol poisoning, and three other deaths and two serious illnesses believed to be due to the same cause. Three of the deaths and two cases of blindness among those referred to occurred among Armenian rug weavers who had purchased from a Greek grocer anisette consisting largely of rectified wood alcohol. It was found that the grocer was ignorant of the poisonous nature of the beverage he was selling, but the manufacturer of the anisette was indicted for manslaughter in the first degree and released on $5,000 bail, and is now awaiting trial.

Wood alcohol in its rectified forms is used in various trades—for instance, in varnishing furniture, lead pencils, and the inside of beer vats; in coloring feathers and artificial flowers as a component part of the dyes; as a solvent for shellac, for stiffening hats, etc.; in the production of photo-engravings; and from stoves and lamps in which wood alcohol is burned.

Numerous instances are on record of men killed and blinded by fumes inhaled from wood-alcohol varnish used to varnish the interior of vats like these pictured on the screen. You will note that the only means of ventilation is the small manhole, and the workmen here shown are protected from poisoning by the tube and ventilator through which fresh air is supplied. Even with this equipment the men are not permitted to work but for half-hour periods, and it has been found more economical by many breweries to substitute the glass-lined casks for the old wooden vats, thus doing away with the possibility of injury to the workmen's eyesight, and likewise protecting themselves from possible suits.

It is believed that such tragedies would rarely occur if wood alcohol were invariably labeled "poison," and if its use in any article intended for internal or external use by man were forbidden. Most people do not as yet know that this liquid and its fumes are so dangerous to life and sight. In many trades where it is used there are not proper precautions observed for the protection of the workmen. It is sold by many druggists, without a poison label, under various trade names, such as Columbian Spirits, Eagle Spirits, Lion d'Or, Colonial Spirits, Hastings Spirits, Acetone Alcohol, etc., all of which may through themselves or their abbreviations be extremely confusing to the uninitiated. It may even be

purchased in groceries and paint shops in absolutely unlabeled bottles or in wrongly labeled bottles and cans. Unscrupulous liquor dealers refill whiskey bottles with cheap drinks adulterated with wood alcohol and sell them to ignorant customers. Because of the all too frequent occurrence of such disasters, we are continually working to induce the important refiners of wood alcohol to discontinue the use of the misleading trade names, and to persuade druggists to discontinue the retail sale of refined wood alcohol, selling harmless denatured alcohol instead. It is cheaper and safer, and to my knowledge there is no use to which wood alcohol is put for which industrial, *i. e.*, denatured alcohol, cannot be substituted. Furthermore, the latter is considerably cheaper than wood alcohol. Legislation should be provided in every State, and by Federal action, if necessary, prohibiting the sale of wood alcohol under any trade name, and forbidding its use without a poison label and warning, and absolutely forbidding its use in beverages, medicines, and toilet preparations. Your Board of Pharmacy, Department of Labor, and Commissioner of Excise have jurisdiction in this matter. With eight million gallons used annually in this country, and 75,000 workers exposed to inhalation of the poisonous fumes, it needs universal attention.

Finally, let us consider a few of the dangers to eyesight as evidenced by the small army of workingmen permanently disabled and thrown on society and the State through injury in the industries. Each State has its own particular industrial problems, and in the endeavor to ascertain those with which North Carolina must deal, I wrote to the Commissioner of your Department of Labor, Mr. M. L. Shipman. From his last report I note that you have nearly eight hundred miscellaneous factories employing 39,000 men, women, and children, nine-tenths of whom are men. Furthermore, you have 296 cotton mills employing 55,000 persons; 78 knitting mills, with 9,000 employees; 84 furniture factories employing 7,000 persons. Fifty-six railroads operate in North Carolina, exclusive of tram and lumber roads, employing a total of nearly 22,000 men. I cite these statistics as a reason for a certain amount of loss of eyesight in your State caused by injuries in the industries. You have in these factories many of the same problems that must be met in other States. They are the homes of many of the same dangers, and much of the same carelessness which causes the 2,000,000 accidents which occur each year, 8 per cent of which (160,000) are accidents to the eyes. Flying steel chips in our foundries, in the final preparation and cleaning up of castings; emery wheels, which, unprotected, are a constant menace through the possibility of a breakage, which may drive a large or small piece of the wheel into a man's eye; exploding water gauges; tools whose ends

have become mushroomed through lack of care and from which bits of steel are likely to fly off and strike the workman or some passer-by; exposure to great heat and light in the modern processes of electric arc or oxyacetyline welding, where a temperature of 6,500 degrees is obtained, and where the ultra violet rays, particularly injurious to the delicate tissues of the eyes, are especially prominent. One can scarcely name an industry which does not have its hazard, or in which there is not—shall we call it criminal?—carelessness on the part of the operatives, due in large part to ignorance. For instance, here is one of the most common occurrences in workshops: A particle of some kind or other lodges in a workman's eye; he appeals to his nearest fellow-workman to find and remove it. Where the "safety first" lesson has not been taught, the natural method of removal is to use the chewed end of a match or roll a corner of a soiled and greasy bandana to a point, wet it in the mouth, and use it to push out the cinder. Infection follows, necessitating enucleation. Such a method seems comparatively safe, however, in contrast with the use of such an assortment of home-made cinder removers as you see here, and which have been gathered from one of our best known industrial concerns.

Improper lighting facilities, or lack of sufficient light, together with improper placement of the lighting fixtures, thereby causing constant eye-strain, lessen a workman's efficiency and tire the eyes and brain to such an extent that accidents are the natural result. The National Council of Safety, the American Safety Museum, and kindred organizations have been a powerful force for good in helping to educate manufacturers and employees alike to the need for the installation of such safety devices as are here illustrated, and which go far to obviate the accidents resulting from conditions just described.

In conclusion, I trust that I have given you a brief insight into the great need for a preventive campaign which will penetrate to every home in our land. The work must be done by State and local organizations, coöperation, financial and otherwise, be freely given, in order to achieve worthy results. You in North Carolina are fortunate in having a man such as John E. Ray, who not only is interested in the education of those unfortunate enough to have to attend a special institution on account of their deficiencies, but who also is keenly interested in the prevention of needless blindness, and who has labored for years throughout your State to drive the lessons of prevention home. You are fortunate in already having a nucleus of prominent physicians and laymen interested in organized effort which will help to solve this problem, and I am sure that when the time seems ripe for the furtherance of plans already

under consideration, there will be no citizen of your State who will not see the possibilities for lightening the burdens of the blind, and doing all in their power to aid in the prevention of further needless blindness. I assure you that the National committee which I represent will stand ready at all times to lend its aid in the necessary educational work, to provide printed matter and exhibits pertaining to this subject, lectures, illustrated or otherwise, for your own use, or to be given by one of our representatives, and I bespeak for such organized effort as may be developed in coming months your hearty and unanimous coöperation.

CONSERVATION OF VISION.

Dr. J. G. Murphy, Wilmington.

This is an age of conservation. Our National Congress has seen fit to devote its best thought and large portions of its time to such questions as conservation of forests, conservation of water-powers, conservation of minerals, and other natural resources. Yet we medical men see conservation (a stitch in time) is not applied to the most valuable asset of our Nation—its health; and further, there is less conservation practiced in our care of the most delicately constructed and perfectly functioning organ of our whole body, the eye. We require a man to study medicine four years and pass an examination and furnish certificates of moral character and sobriety before we let him dispense calomel and quinine and puncture furuncles; and yet in every town of a few hundred people is one or more men examined by one of their own kind and given State authority in a license, which is displayed in a prominent place, to practice on this eye. Most of these men, by their own wish and to give themselves prestige, affix to their names the word "doctor," which word Webster says means "one learned in." Are these men really learned? There is a statute against this usurpation of the title in the State of New York. There is doubtless not a person under the sound of my voice who does not know, or know of, one or more such professional (?) men.

In the year 1913 the chairman of the section of Ophthalmology of the American Medical Association, whom I have the honor to claim as my personal friend, had this to say about optometry:

"Our motive for opposing legislation desired everywhere, and now existing in thirty States, is a conviction that it is the duty of a conscientious physician to oppose anything calculated to give the public false teaching on physical and medical truths.

"It is more generally appreciated now than formerly that glasses are therapeutic means for combating the results of congenital deformity, senile changes, or functional results of disease, and that the diagnosis is part of medicine.

"The optometrist has only a small part of a big science; he is not trained to know even where his sphere of activity ends; his work is full of danger to the public, for without medical training he cannot be depended upon to know the difference between health and disease; yet the fact remains that he often does give satisfactory spectacles, and there is a large class of persons whom he has served for years and will probably continue to serve until he makes some blunder."

We see the evils of their practice, and we are sounding this note of warning to our great State Society. It is up to you, gentlemen, to stop this, or let it go on. So much for conservation as to these *quasi* professional men.

Now turning to the more pleasant side, the opportunities that come to us in our daily practice as ophthalmologists. A venerable and distinguished physician in our city approached me recently, only a few months before he received his summons to go up higher, and requested me to prepare a paper for our district society on the importance of early and proper treatment of eye conditions. In his large experience in the practice of medicine his common sense had led him to catch a vision of what an enormous saving of pain, vision, comfort, and expense would be brought about by applied conservation of vision. Many are the patients with iritis we are called upon to treat from month to month that have as their part days and weeks of loss of time, discomfort, pain, suffering, and often agony, when if Thompson's Eye Water had not been relied upon at first, and they had sought competent medical aid early enough, their days and weeks of illness could have been reduced to hours and days, and they would have now two normal eyes, instead of one normal and one with a vision blurred and dimmed for life, thus handicapping them for future usefulness, and leaving them an eye with an increasing predisposition to recurrent attacks of a malady that has already proved so fatal. It is surprising how promptly we see these patients in our offices at the beginning of their second and each succeeding attack. The school of experience, of which we have all heard, has taught them a lesson.

Can not we physicians devise some way to help these people to learn this lesson in a cheaper way?

I have spoken of iritis more fully because we see it so often and see what delay and mistakes cost in it; but in equal proportion might be pointed out the importance of the early correct diagnosis and proper treatment of glaucoma, uveitis, phlyctænular conjunctivitis, and keratitis, and many others. I might elaborate on each of these as I have on iritis,

and wind up as I did with it, in pointing out the mistakes we are daily seeing as a result of delays in this line of medicine. In passing, I will not fail to emphasize the importance of advising the laity of the ultimate results of neglecting a proper refractive correction of higher degrees of hyperopia and myopia, and also what it means to neglect in the young a concomitant squint, which will soon result in not only the permanent loss of vision in one eye, but also the hideous disfigurement of a crossed eye for life, which disfigurement increases in unbecomingness each year the victim grows older. In the very old these look awful.

In concluding, I would stir up your minds to remember the importance of conserving what we already have in the eye.

A FEW WORDS ON PRISMS.

RICHARD H. LEWIS, M.D., LL.D.

(Oculist to Rex and St. Agnes Hospitals and to the State School for the Blind.)

As indicated by the title above, it is not my intention to impose upon your patience an elaborate and technical dissertation on the use of prisms in the alleviation of asthenopia, but merely to call attention to certain facts in relation to this subject that have come under my own personal observation. All well informed ophthalmologists are familiar with the optical principles of prisms and their practical application in the treatment of eye-strain; but, judging from my own experience in my earlier work, I think it not unlikely that we sometimes overlook the need for them.

As most of you, especially the younger members of the society who have been so much more thoroughly trained than those of an earlier day, are probably already aware, asthenopia or eye-strain is of two varieties, the accommodative, where the strain, owing to some error in refraction, is upon the ciliary muscle or muscle of accommodation, and the muscular, where the strain is on the external ocular muscles, when the balance between those pulling in opposition to one another is disturbed. It is with this latter we are concerned.

When the preponderance of one muscle over its antagonist is so pronounced as to cause a manifest and permanent deviation of the eye, we have strabismus, or squint of one form or another. As the correction of so marked a deviation is beyond the reach of prisms, this does not interest us. But a tendency to squint—a latent squint, a lack of balance be-

tween two opposing muscles owing to weakness or insufficiency of one or too much power in its antagonist—heterophoria—the correction of which can often be accomplished by prisms, is the subject for discussion.

The tendency of the visual axes to deviate from parallelism in the horizontal plane inward, esophoria, or outward, exophoria, when the balance between the internal and external recti becomes upset is generally so marked that help with prisms is frequently temporary and in most cases unsatisfactory. The tendency is for the aided muscles to become still weaker and weaker until prisms strong enough to restore the balance practically cannot be worn. Partial correction, though, is often helpful.

In hyperphoria, however—the tendency of one eye or the other to deviate in the vertical plane—the amount of error is very rarely too great to prevent the employment of prisms which are not too heavy for constant use. And in this form of imbalance the tendency to further weakening of the muscle aided is nothing like so great as in the case of those muscles whose line of action is in the horizontal plane, and rarely ever induces sufficient deviation to forbid the practical and successful use of prisms for its correction.

Where the hyperphoria amounts to as much as one degree or more its presence is so manifest as to attract the notice of the examiner and suggest its correction; but it is the slighter degrees that are sometimes overlooked or disregarded to which I wish particularly to call attention.

Errors in refraction, by causing a disturbance in the innervation of the muscles, are probably the most frequent cause of their loss of balance, and the accurate correction of the same will frequently restore the equilibrium. It is well, therefore, to await its effect in the slighter degrees before offering special help to the weak muscle in the form of a prism. But there are some cases with what would generally be regarded as a negligible degree of hyperphoria whose asthenopia persists in spite of the accurate correction of the error in refraction, which will only be relieved by the addition of a weak prism. Indeed, I have had cases which on the first, and even second, test after an interval of months showed no departure from parallelism of the visual axes, and which still complained, although much relieved by the correction of the error in refraction, that subsequently showed not more than half a degree of variation, the correction of which put on the finishing touch and completed the cure. From the fact that full relief was obtained only by the addition of the weak prism, it appears that there was present all along a slight latent hyperphoria, the trifling strain of which in a highly sensitive nervous organization kept up the symptoms. Nearly all these cases have been in women of that character.

In order to illustrate what I have in mind, I will briefly describe a case:

Miss D., a student at one of our colleges for women, suffered greatly from severe and exhausting headaches. Examination revealed a slight hyperopic astigmatism of 0.50 D. "against the rule." There was no evidence whatever of imbalance of the ocular muscle. Plus cylinders with axes horizontal were prescribed, with only partial relief. A second test was made under homatrophine, which showed exactly the same kind and degree of astigmatism, the only difference being a very slight tilting of the axes of the cylinders; still no sign of muscle weakness. The trouble continuing in sufficient degree to incapacitate her for work, a third test was made, without result. At my request, she returned again, and then for the first time there appeared what could hardly be called more than a suggestion of hyperphoria. I immediately added to her cylindrical glasses a prism of $\frac{1}{2}^\circ$ and had her sit for a little while with both on. Another test in about a half-hour showed that the $\frac{1}{2}^\circ$ had been fully accepted, and a prism of 1° was immediately substituted and in a short time was likewise accepted. The addition of the prism made her more comfortable at once. A new glass for one eye, combining cylinder and prism, was given, and relief was prompt and practically complete.

You will note that the mere suggestion of hyperphoria was seized upon and the total gradually teased out, so to speak, by beginning with a very weak prism and gradually increasing its strength.

This kind of work requires, of course, much time and patience, but the effort is worth while, even if we can give relief to only a few out of many.

AMBLYOPIA FROM WOOD ALCOHOL.

Dr. F. J. Pate, Greensboro.

The term amblyopia in wood alcohol poisoning is erroneous, as the term is properly used to designate poor vision without any discernible cause with the ophthalmoscope. In wood alcohol amblyopia there is usually a discernible cause in the form of optic nerve atrophy.

Wood alcohol poisoning is occasionally seen in this country, and is the result of the ingestion or inhalation of wood alcohol. There have also been reported cases of poisoning from cutaneous absorption. The result is generally the loss of central vision. The amblyopia of wood alcohol differs very little from that of grain alcohol or of tobacco, except that in

that from wood alcohol the chances for recovery of vision are slight, while in that from tobacco and from grain alcohol the chances for recovery of vision are good.

The amblyopia in wood alcohol poisoning is said to be due to a degeneration of the ganglion cells and of the papilla-macular bundle in the optic nerve, and is a progressive atrophy.

I recall the case of a young man who drank wood alcohol by mistake; the quantity taken could not be ascertained, but he thought it to be about 2 ounces. After about two hours there was intense gastro-intestinal disturbance, followed by severe headache, giddiness and chilliness. In about thirty hours he noticed a dimness of vision, and this increased until at the end of five days it was 2.60, both eyes having the same vision. The pupils were somewhat dilated (about 4 mm.) and sluggish, reacting slowly to light and to convergence, but not at all to accommodation. After the fifteenth day the vision gradually improved until the thirtieth day, when it was 6.21. On the thirtieth day a diminution in vision was noted, and gradually it decreased until central vision was lost.

The visual fields for white and for blue were contracted 10° each all around, while there was a sector-shaped scotoma for blue extending from 20°-30° from the macula, with its longest axis at 180°. Inside this scotoma for blue there was a corresponding scotoma for white extending from 10°-20° from the macula. These scotomata varied more or less on different days, but the shape remained about the same. In taking the field of vision the standard 5 mm. discs were used.

Ophthalmoscopically: at first both discs were swollen and edematous, the swelling being more noticeable below the disc and between it and the macula. The arteries were contracted and the veins engorged at first, but on the tenth day the decrease in the size of the veins was noticeable. On that day the swelling around the nerve head was diminished and gradually during the next few days the formerly swollen area became paler than the surrounding parts of the fundus, and the nerve head took on the grayish and depressed appearance of optic nerve atrophy. It was noticeable that while the veins regained their normal size, the arteries did not.

This man I had under my observation about three months, and while his general health was soon about as good as ever, his vision remained very bad, and when I last saw him his direct line of vision was an absolute scotoma with good peripheral vision, except for a contraction of nearly 10° all around.

I recall three other cases that I have seen that were almost parallel with this one, except that the visual fields and the ophthalmoscopic appearance of the fundi of no two cases were alike.

In none of these other cases was the edema of the tissues around the nerve head so noticeable nor the end result so bad as in the first one. The treatment given in this particular case consisted of sweats from pilocarpine-hydrochlorate ¼ grain hypodermically once a day, Turkish baths every two days and mercury by inunction. Later, when the swelling of the nerve head subsided, potassium iodide and strychnine were also given.

I think that this was a comparatively typical case of wood alcohol amblyopia, with the end results as good as usual.

Dr. James B. Bullitt, Chapel Hill: There is one point to which I wish to call attention in connection with the fight now being waged against the optometrists. We oppose optometry bills because they permit men untrained in medicine to treat important ocular conditions that demand expert attention. In other words, these men wish to engage in an important branch of the practice of medicine without an adequate training for it. We all recognize the serious damage that often results therefrom. But we carry our opposition too far when we try to prevent opticians from prescribing glasses. Many of these men are not only conscientious, but do skillful work in refraction. Comparatively few of our small towns can support an oculist. The people in these communities are forced to travel considerable distances (which they cannot or will not do) or resort to the help of the optician. In the present state of our development this help is better than they would obtain if we forbade the optician to do refraction. What I have said applies to the small towns rather than to the cities; and of course I refer only to refraction, not to the treatment of actual ocular disease.

In regard to the action of wood alcohol, I wish to cite two cases that came under my observation several years ago. Synthol is a product sold as a substitute for absolute alcohol for laboratory work. It is cheaper than grain alcohol and serves very well for most laboratory purposes. I have known quite a number of physicians to use it. It is practically a pure wood alcohol. A janitor in my laboratory took a big drink of it one day under the impression that it was ordinary alcohol. He was in a desperate condition for several days, but finally recovered his general health. When his optic neuritis subsided, however, he was left with something less than 10.20 vision. The other case was that of a man of about 45 years of age, who was much worried over the progressive loss of his hair. He made vigorous use of a popular hair tonic, which on subsequent analysis proved to contain wood alcohol. A neuroretinitis with resultant complete blindness was the sequel. I suppose the poisoning in this case was due to the inhalation of the fumes of the alcohol, for he had been applying the tonic in large quantities for a good many weeks.

Dr. W. Perry Reaves, Greensboro: The question of optometry is simply this: No one has any objection to optometrists. But some of them advertise and label themselves doctors, and it is nothing more than doing business under false pretenses, if the "Dr." is interpreted as equaling "M.D." Many people go to town from the country, suffering from eye strain or disease, seeking relief from a doctor, or to have their eyes fitted, and are misled by a sign "Dr. ————, Eyesight Specialist," who we know is an optician. Now, this is putting these people on a par with a physician who had his four years training. The State prohibits foodstuffs being sold under a label other than one that tells what they are. Ought not our State to prohibit an optician from calling himself "Dr."? That is the only thing against the optician or optometrist. When a person goes to seek a doctor for an eye trouble, and he believes the "Dr.," the eyesight specialist, is a practicing physician, the glasses and eye-drops he gives them sometimes prevent them from being treated by an "M.D." until they are hopelessly blind. Had they spent the money for proper medicine, instead of glasses, today they doubtless could see.

In the discussion of ophthalmia neonatorum a great link was left out. Many of these cases are reinfected after delivery, especially in poor homes. Some women have to look after themselves and the baby, and the child may not be infected during delivery, but later. Then the doctor fails to see it until it gets very bad. If you treat it once a day, you lose the eye. Something ought to be given to the general practitioner to help him out. A great many eyes are put out by injury to the cornea of the eye in cleansing it. Unless a person is trained in handling and manipulating the eyes, he had better never try to remove pus with a probe, etc.

There has been much discussion about the antiseptic effect of argyrol. It will not kill the "bugs" like nitrate of silver, but it will cleanse the pus from the eye better than a wash. You can take a 10 per cent solution of argyrol and give to a mother or incompetent nurse and let her use it. The argyrol causes the mucus and pus to escape from the eye to the outside of the lid, where it is easily wiped off. If you are going to do any good with it, you must use it every twenty to thirty minutes. You must give the doctor a weapon to save his patient. You must give the mother instructions to treat the baby, to keep the eye clean and not injure it. In using a simple remedy like argyrol, use it day and night. A 10 per cent solution of argyrol used by the nurse or the mother, with a 1 per cent silver nitrate mopped on the everted eyelids once a day by the physician, will save the eye.

Dr. E. Reid Russell, Asheville: After the birth of the child the lids should be wiped dry with a piece of sterilized gauze; the eyes should be carefully opened and with a sterilized medicine dropper one drop of a 2 per cent solution of nitrate of silver should be carefully dropped into the conjunctival cul-de-sac. When the inflammation has actually set in, a fountain syringe should be filled with some antiseptic solution, warm, the lids everted and irrigated with this solution, stopping from time to time to wipe away, with pledgets of cotton, any adherent discharge. Care must be used not to touch the cornea with the nozzle of the irrigator, on account of danger of detaching a portion of the corneal epithelium, thus causing infection of cornea and ulceration and loss of the eye.

The optician has the same right to sell glasses that any store has, but he should not be allowed to advertise under the name of doctor, as that simply fools the people. This man charges nothing for his services, and why should he? The service is worth nothing after the patient is injured by not having the proper examination.

Let every tub stand on its own bottom. Often the doctor is fooled and will let his patients be humbugged by this man who does something for nothing.

Dr. J. G. Murphy, Wilmington: I have especially enjoyed the papers of the two laymen who have come to us, Mr. Ray and Mr. Berry. The fact that they have brought us these messages proves that this is a subject that is worthy of consideration, both from its social and economic and humanitarian standpoints. We are spending lots of money to economize in many other lines of the government of our State, if I might put it that way, and it strikes me that we are passing over a line here that will be of inestimable value to us from an economic standpoint, if we don't value the humanitarian and social sides. I have just dismissed from the hospital a patient who lost one eye from ophthalmia, and his vision in the other eye is 4/70, and this a young man, a perfect physical specimen, a farmer twenty-six years of age, married. He contracted his infection from a laboring man who attempted to get something out of his eye. He got a foreign body in his eye at a sawmill and one of the laborers attempted to get it out for him, and put the gonococci in one eye, and from this it went to the other.

Now, I have not one word to say against a class of men that are going to help the public. I would like to help them myself. There are people whose means are limited who cannot go to an oculist, and with these I sympathize; but do not let us stand by and approve of their being treated by a self-named class of men whom we do not patronize ourselves.

The North Carolina oculists are ever and always ready to serve the deserving poor.

Dr. W. Perry Reaves, Greensboro: If you will put ophthalmologists and opticians on their merits, there will be more instead of fewer of them, and there will be no rivalry. It is simply a matter of allowing them to be called doctors when they are not. Now, a bill has been introduced once or twice to prevent them from being called doctors. They will continue to do it until the profession demands that they shall not. Don't label them doctors unless we take them into the society.

Mr. John E. Ray, Raleigh: I want to emphasize as thoroughly as I possibly can the extreme danger arising not only to babies, but to the rest of us around our hotels and other places where we use sheets and pillowcases and towels, etc., and thereby increase the danger to ourselves. I illustrated what I have in mind in my paper by an incident affecting a physician, you remember. I have read since writing my paper of a fine young woman who was working in a hotel in one of our cities who became infected by handling the towels and sheets from rooms occupied by persons affected. Not knowing what the trouble was, the woman and her child became absolutely blind from the careless use of the hotel property. I think you cannot emphasize too much the extreme danger to our whole race.

Mr. Gordon L. Berry: The work of the National Committee for the Prevention of Blindness is so completely social in its nature that it would scarcely be fitting or justifiable for us as laymen to enter the discussion in a meeting of this kind. I thank you for the privilege extended, however, and assure you that we are interested in all of the points brought out in these discussions.

HYGIENE, SANITATION, AND PREVENTIVE MEDICINE.

THE HOPE AND MENACE OF HEREDITY.

Dr. W. J. McAnally, High Point.

In surgery our first consideration is absolute cleanliness, or as near it as possible. Failing in this fundamental principle, surgery becomes disastrous. In our efforts to cure and prevent disease, to prolong human life and make it attractive and useful, there is here one master fact which should challenge our attention and receive most earnest consideration. In many diseases heredity plays a most important rôle, and is recognized by all writers. But its patent, all-important, and far-reaching influence is not yet accorded its rightful place in medicine as that science relates to human progress. Heredity's influence upon individuals, nations, and even races of men can scarcely be overestimated. When received in its real and proper place, it is easily seen to be the greatest menace and the greatest hope of the race.

Some months ago a noted preacher in this State scoffed at eugenics; but if our Bible be true, the Eternal God himself must have written the laws of heredity. If there be anything in sacred or profane history that we may believe, or if we may trust our own senses, then it is safe to believe that the sins of the fathers often curse the children, and it is not unreasonable to expect that the child of white parents will have skin and hair somewhat like its parents. These things are matters of common knowledge, and it is inexcusable in bishops and other laymen that they should not understand that they are not fads. Benign, eternal, divine, inevitable law, from the pen of creation's Master did it come, and since the time when the morning stars sang together has it blessed the wise and prudent and cursed the erring ignorant. That essentially immortal germ plasm, with its marvelous power of reproduction and its possibilities of endless preservation of life in many forms found upon the earth, with unrebelling submission yields perpetual obedience to God's laws of life. This same germ plasm has been the connecting link between all the generations of men. Though more clearly related to the generation that preceded this one, the present generation is akin to and part and parcel of all the series of beings in its ancestral lines. This essentially immortal germ plasm brings with it from the immediately preceding generation

only one-half of the characteristics with which it blesses or curses the present population. In other words, a parent may count upon only one-fourth of the characteristics of the progeny, and many character units of even this one-fourth may be recessive and the dominant units prevail from the other parent or grandparents. Of course, character units are transmitted from both parents. But character units do not blend. In crossing dissimilar parental characteristics, those from one parent tend to become active or dominant, while those from the other parent tend to become inactive or recessive. The first generation resulting from a cross of one parent having a dominant characteristic with another parent having a recessive characteristic is a hybrid bearing the dominant characteristic. The large number of factors involved in the complex problem of human heredity has made it necessary that conclusions be arrived at only after wide and thorough investigation by honest and competent observers. It was by this process that Mendel finally discovered the law of heredity. Stating further the Mendelian law, it was discovered that the second generation, the result of crossing dominants with recessives of the preceding generation, manifests an average of three dominants to one recessive. The third generation, if bred from pure dominants of the second generation, will be made up of pure dominants, or, in other words, will breed true and continue to breed true. If the third generation is bred from impure dominants (hybrids) of the second generation, then the third generation, like the second, will be made up of three dominants to one recessive; if bred from pure recessives, they will all be recessives, and continue to breed true.

Thus it was discovered that character units are independent of each other.

To determine one's own inherited attributes and potentialities: This can be done only by a careful and unsentimental analysis of the character units of ancestors as far as the facts may be available. With this knowledge the individual has a safer key with which to open the door to efficiency and happiness. Only by this means can conduct be given safe direction. As the law of heredity is the fundamental law of existence, it is but natural that it be made a fundamental part of educational training and sound ethics. What a given strain of germ plasm has done in previous generations, it will do again in the present, except as it may be modified by breeding and restrained by environment. The probable modification by breeding is in many cases predeterminable, due regard being given to segregation and dominance, but especially to the recession of character units. So persistent are germinal traits that when pronounced in ancestors, they are likely to exist under mask—under lock and key, as it were—in the progeny or some of the progeny, only, however, to become

active in the next succeeding generation: and it is a plainly imperative duty to determine as far as possible the probable characteristics of a contemplated progeny and to interpret such characteristics for the intelligent guidance and protection of children in educational, ethical, and social relations. This phase of personal duty on the part of each parent cannot be ignored, nor can the penalty for failure in the discharge of this duty be evaded.

Dr. McBrayer, Sanatorium: Dr. Chase of Chapel Hill has given a great deal of attention to testing the mentality of children, repeaters in the schools, etc.—those that are behind grades—and is doing a very splendid work just now in bringing this important work to the attention of our people. He does this in connection with the extension work of the University, which extension work is becoming of equal importance with the academic work of the University. Dr. Chase was not able to be here today on account of other important engagements.

The matter of heredity is a thing that must be brought to the attention of the people of our State. I was talking once of the prevention of disease in human beings and of how little attention was paid to it by the State compared with the immense amount of attention paid to having healthy plants and animals and trees, and Dr. Hill, president of the A. and M. College, very wisely suggested that it was because we hadn't been saying much about it until recently. Now, it is time in the State of North Carolina when we should stop sentencing boys and girls and men to the penitentiary for life and hanging them because they are defective. They are sick. The State ought to take care of them in some way. We are doing an injustice to a large number of people in our State by calling our defectives criminals.

These papers are open for discussion.

HEREDITY AS RELATES TO FEEBLE-MINDEDNESS.

Dr. C. B. McNairy, Kinston.

In discussing this subject, I trust I will not be expected to rely upon my own observation, experience, or knowledge, which is quite limited; therefore, I will of a necessity be compelled to quote freely from psychologists, biologists, and the later authors on works of heredity and feeble-mindedness, giving a short summary of their conclusions.

Webster defines heredity as that which descends by inheritance. I think our former ideas of heredity have been very charitable to our forbears, in that we were wont to trace only our good qualities of manners, intellect, and social and political achievements to the long ancestral stream of blue blood or royalty that courses through our veins, and our misfortunes, mental and physical afflictions, to something entirely foreign—for instance, to evil spirits, witchcraft, the lack of social, educational, and religious environments.

How often have we heard it said that he or she came from the noblest blood, but seems possessed of the devil—not for an instant dreaming that they have inherited long accumulating ancestral weaknesses, and really are only the unfortunate objects of the penalty of the sins of the fathers!

Mendel's law was discovered by the crossing of individual plants, mostly peas, with one pair of contrasting characters. His method consisted in crossing two forms having distinct characters and counting the number of offspring in successive generations showing one or the other of these characters.

He called the peculiarity with which the two plants differed, "the unit character"; for example, the tallness or the color of the seed, he called the characters which appeared in the first generation of the result of his cross-fertilization, the dominant. The one that did not appear until the second generation he called recessive, on the ground that it was there in the first generation, but did not appear. It had receded, as it were, to the background, only to reappear in the next generation.

Considering the spermatozoön and ovum in animals: it was found that if these "germ cells" previous to being placed under the microscope were put in some kind of stain, certain bodies appeared in the cells, because they had absorbed some of the stain or coloring matter. Nothing was known of the function or the purpose of these bodies, but because they became colored under this treatment they were called color bodies or chromosomes.

[1]It was found later that there was practically always the same number of these bodies in the germ cells of the same species of plant or animal. They were thus not accidentally colored bodies, but bodies of some significance. Furthermore, it was discovered that there is a process of maturing or ripening in these cells before they are ready to unite with the cell of the opposite sex for the formation of a new individual. In this ripening the number of these bodies, or chromosomes, is reduced one-half.

[1]Goddard, "Feeble-mindedness," page 534.

[2]It is thus seen that in the new individual formed by this union of these two mature cells there will be the regular number of bodies, or chromosomes, half of which have come from each parent. It was soon concluded that these chromosomes were to be considered the bearers of heredity, which in part, at least, explains the mechanism of the transmission of the traits from parents to children. The offspring may inherit the same trait from both parents, or he may inherit from only one; therefore, we have duplex, simplex, multiplex, giving us the neomendelian classification of individual inherited determiners. For reasons which we cannot explain here, the biologist conceives that each chromosome has within it what are called determiners, that is, certain particles, molecules, or elements, which contain within themselves the potential organ which they represent, or some quality or characteristic of the organ, such as the color of the eye or of the hair. If the individual has brown eyes, it is because his chromosomes carried determiners for brown eyes. If he has long arms, it is because his chromosomes—some of them, at least—carried determiners for long arm bones.

[3]Many investigators have carried out similar experiments on many species of animals and plants and have greatly extended our knowledge of the principles of inheritance discovered by Mendel. But, in the main, Mendel's conclusions have been confirmed again and again, so that there is no doubt they constitute an important rule of inheritance among all organisms.

[4]Breeders have long known that it is possible to get certain desirable characters of an organism from one race, and other desirable characters from another race. Since the discovery of the Mendelian theory of heredity, such new combinations of old characters have repeatedly been made, and with almost the same certainty of results as when the chemists make combinations of elements or radicals. This is the chief method employed by Burbank in producing his really wonderful new creations in plant life. By extensive hybridization, he brings about many new combinations of old characters, a few of which may be commercially valuable.

East and Shull have shown that hybrids between two races of corn may be very much larger and more fertile than either parent. Unfortunately, such hybrid races of corn do not breed true, and crosses must be made anew in each generation if maximum results are to be had. Nevertheless, this method of hybridization, or heterozygrosis, as it has been called, offers extremely important means of quickly producing very vigorous and fruitful individuals, but not lines or races which breed true.

[2]Goddard, page 536.
[3]Conklin, "Heredity and Environment," pp. 250, 297.
[4]Conklin, "Heredity and Environment," page 379.

This is what is meant by the control of heredity, namely, the possibility of preventing the reproduction of individuals with bad traits, and of making new and favorable combinations of old traits by means of selective breeding, and of seizing upon and perpetuating new and favorable mutations.

The Mendelian association and dissociation of characters produce new forms of adult animals and plants, but not new hereditary characters. New combinations of factors may be compared to new combinations of chemical elements. You can always get out of the combination what went into it. The actual origin of new hereditary characters or mutations is obscure. Many individual modifications may be produced which do not become racial. In most cases such mutations consist in the dropping out of some old character rather than in the addition of a new one.

Science has taught us something of the wonderful stability of the past time and of future ages—something of the eternity of natural processes. It is surely not possible to improve on nature's method of eliminating the most undesirable lines from reproduction. This has been the chief factor in the establishment of the races, of domesticated animals, and cultivated plants. The improvements of environment and opportunities for individual development enable men at the present day to get more out of their heredity than was possible in the past. The advance of civilization has made only improvements of environment, but neither environment nor training change the hereditary capacity of man. There has been no perceptible improvement in human heredity within historic time—nothing comparable with the changes which have occurred in domesticated animals. Indeed, no modern race of men is the equal of certain ancient ones. The method of elimination by the destruction of the weak and cowardly and antisocial, which was the method practiced in ancient Sparta, is repugnant. The worst forms of mankind may be prevented from propagating, and the best types may be encouraged to increase and multiply.

"Children's children are the crown of old men, and the glory of children are their fathers." (Prov., 17:6.)

Galton has pointed out the fact that in the little country of Attica, in the century between 530 and 430 B. C., fourteen illustrious men, one for every 4,300 of the free-born adult male population, were produced.

In the two centuries, 500 and 300 B. C., this small, barren country, with area and total population about equal to that of the present State of Rhode Island, with less than one-fifth of the free population, produced twenty-five of the illustrious men, among whom were Pericles, Aristodes, Cimon, Themistocles, Euripides, Sophocles, Socrates, Plato,

Aristotle, Demosthenes, and others. These illustrious men came from a remarkable race, composed of individuals, by a process of unconscious but severe selection. Athens was the intellectual and social capital of the world, and to it the most ambitious and capable men were irresistibly drawn. It was a good heredity as well as good immigration that made Athens famous.

Galton concludes that the average ability of the Athenian race of that period was, on the lowest possible estimate, as much greater than that of the English race of the present day as the latter is above that of the African negro.

Social immorality increased exceedingly fast, marriage became unfashionable and was avoided. Many of the more ambitious and accomplished women were avowed courtesans, and consequently infertile, and the mothers of the incoming population were of the heterogeneous class. It is, therefore, no surprise to us that the high Athenian breed decayed and disappeared.

"He that begetteth a fool doeth it to his sorrow, and the father of a fool hath no joy. . . . A foolish son is a grief to his father, and bitterness to her that bare him." (Prov. 17:21 and 25.)

The best authorities[5] of today give heredity as the direct cause of feeble-mindedness in 75 per cent of the cases with the most conservative, others holding that as much as 90 to 95 per cent of all feeble-mindedness is due to heredity.

[6]Feeble-mindedness produces more pauperism, degeneracy, and crime than any other one force. It touches every form of charitable activity. It is felt in every part of our land. It affects in some way all our people. Its cost is beyond our comprehension. It is the unappreciated burden of the unfortunate. It is a burden we are compelled to bear; therefore, let us bear it intelligently, to the end that the chain of evil may be lessened, the weak cared for, and the future made brighter with hope because of our effort.

"Ye who are strong *must* bear the infirmities of the weak."

[7]There can be no doubt that the main characteristics of every living thing are unalterably fixed by heredity. Men differ from horses or turnips because of their inheritance. Our family traits were determined by the hereditary constitutions of our ancestors, our inherited personal traits by the hereditary constitutions of our fathers and mothers. By the shuffle and deal of the hereditary factors in the formation of the germ cells and by the chance union of two of these cells in fertilization

[5]Dr. H. H. Goddard, Vineland, N. J.; Dr. Burnstine, Rome, N. Y.; Dr. Richard Cabot, Boston, Mass.; Dr. Fernald, Waverly, Mass.
[6]Amos W. Butler.
[7]Conklin, "Heredity and Environment," page 447.

our hereditary natures were forever sealed. Our anatomical, physiological, psychological possibilities were predetermined in the germ cells from which we came. All the main characteristics of our personalities were born with us, and cannot be changed except within relatively narrow limits. "The leopard cannot change his spots nor the Ethiopian his skin," and "though thou shouldst bray a fool in a mortar with a pestle, yet will not his foolishness depart from him." Race, sex, mental capacity are determined in the germ cells, perhaps in the chromosomes, and all the possibilities of our lives were there fixed, for who by taking thought can add one chromosome, or even one determiner, to his organization?

It has been well said that there are three important events in a man's life:

"His ingress into the world;
His progress through the world;
His egress out of the world.
His ingress into the world is naked and bare.
His progress through the world is trouble and care.
His egress out of the world is—God knows where!
If he does well here, he will do well there."

SOME FACTS CONCERNING HEREDITY.

Dr. S. S. Coe, High Point, N. C.

It is traditional that one cannot gather grapes from thorns nor figs from thistles. The tradition embodies, by implication, the essence of the great central law of heredity. This law is stated more explicitly in the phrase, "Like produces like." The sum and substance of the matter is, that each and every living organism, be it vegetable or animal, tends to produce its own kind, and if we would get at the fundamental law of heredity, we have but to follow up the clue that this fact gives. We may see the first principles illustrated to best advantage, perhaps, if we consider the lowly single cell organisms of which bacteria furnish a familiar type. These creatures observed under the microscope are seen to multiply by division, a single bacterium splitting to form two bacteria, each of which presently grows to the size of the parent bacterium and then repeats the process of division. Such a process of multiplication obviously passes on the substance of an organism to its descendants in so definite and tangible a way that there is nothing mysterious in the observed fact that children are closely comparable to their parents. It

is inconceivable that they should be otherwise under the circumstances. The basal fact of heredity, then, observed thus, as it were, at its source, seems not in the least mysterious, but a mere matter of fact. When we reflect that complex higher organisms are made up of groups of cells, aggregated and differentiated to perform specialized functions, and that all growths take place through cell division, it will be clear that the distinction between the single cell organism and the complex higher organism is not as radical as might at first appear. Each individual, even in the highest forms of life, including man himself, begins existence as a single cell and grows and develops through countless redivisions of that cell.

There is, however, a highly important modification to be noted in the fact that the cells of the higher organism become differentiated into divergent groups, capable of performing different functions, and from our present standpoint the thing to be particularly noted is that the tissues, serving the purpose of reproduction of the species, are segregated. This segregation takes place in the case of higher animals at a very early stage of embryonic development of the individual.

The full significance, from the standpoint of heredity, of this segregation of the germ-plasma has been appreciated only within comparatively recent years. It was not until Prof. August Weisman made special studies of this subject, about thirty years ago, that the subject prominently attracted the attention of biologists. He was struck by the fact that single-cell organisms, owing to the character of their reproduction by division, or, as he phrased it, "potentially immortal," do not normally die, but rejuvenate themselves by division, a given individual becoming two and these two presently becoming four, and so on in an unending geometrical progression, in which the descendants of any generation whatever might be regarded as representing the divided substance and personality of the original ancestor.

He made application of this thought to the cells constituting the germ-plasma of the higher organisms. These, he said, pass on their substances and hence their potentialities from generation to generation much as does the protozoas. And this fact of the continuity and virtual immortality of the germ-plasma furnishes the explanation of the observed facts of the hereditary transmission of qualities from one generation to another. Parent and child are thus sprung from the same germinal strain, and really they should not be regarded as mother and daughter, but rather as sisters of the same fraternity. The child has the qualities and characteristics of its parent not through any occult law of transmission, but because they both draw their qualities from the same germinal stream—the perennial stream of the ancestral germ-plasma.

It is important to get this idea of the continuity of the germ-plasma clearly in mind, for it furnishes the clue to a clearer understanding of the mysteries of heredity than would otherwise be possible.

It must at the same time be clearly borne in mind, however, that the stream of ancestral germ-plasm, which thus serves as the carrier of hereditary capacities from generation to generation, is not entirely beyond the reach of external influences, and does not remain absolutely unmodified throughout indefinite periods of time. It must be understood, however, that the modification that can be introduced in the germ-plasm in any given organism through whatever environmental changes are relatively slight as contrasted with the totality of qualities of that germ-plasm.

It is inconceivable, for example, that the germ-plasm of the oak should be so modified that its offspring would bear apples, or that the sprouts from the apple tree should bear grapes; but we all know that an apple tree grown from the seed of the mother apple will not bear exactly the same fruit as its mother. However, the apple may be only slightly changed.

If really radical transformations could be wrought in germ-plasma of any organism in a brief period of time, the whole organic world would be topsy-turvy and there would be no laws of heredity to discuss.

Let us, then, supplement our idea of the continuity of the germ-plasma with the thought that this germ-plasm may be modified from time to time, but that the amount of modification permissible within any limited period is infinitesimal in comparison with the sum total of the qualities of the germ-plasm itself, which qualities, it may be added, represent the aggregate influence of past environments throughout vast periods of time.

Luther Burbank has a capital phrase to the effect that "heredity is the sum total of all past environments." The import of the phrase becomes perhaps clearer if we think of it in connection with this picture of the ancestral germ-plasm, the tangible and definite series of cells directly linking every individual of any generation with the entire series of its direct ancestors.

Having concluded that heredity is a product of the germ-plasma and not body-cells, we will go into a more gross and thorough study of the different hereditary traits, characteristics, and diseases transmitted from parent to child.

The importance of heredity in the causation of insanity has long been recognized. The statistics of all institutions for the insane take full account of it. The subject is one that is difficult to investigate, as there

is a widespread feeling among the laymen that there is an element of disgrace attached to insanity. Hence the family and friends of the insane patient are prone to look for another reason, and if we are not on the alert we will be drawn to their way of thinking, harking back to some injury received during childhood, or some calamity of later years. So in examining the records of the asylums we find that they have been able to trace over 50 per cent of all cases to heredity. I verily believe that if we would, or rather could, trace every case of insanity back far enough we would be able to find a strain of the disease in some of the ancestors. However, this is only my opinion, and not an established fact.

We must not leave the impression that every person who suffers mental overthrow is a direct descendant of an insane individual, because such is not the case. More generally the heritage of mental instability will be traced through some collateral line. It will be found that an aunt or uncle has been similarly affected, or the relationship may be even more remote. It appears that the forms of nervous instability that lay the foundation for insanity tend to act as Mendelian recessives in heredity. It follows that if an insane person is mated with a perfectly normal one, the offspring will probably be personally normal, although carrying the factors of nervous instability in their germ-plasm. But if two individuals having this heritage are mated, even though both are personally normal, there will almost certainly be evidences of nervous instability in at least one out of four of their progeny.

It will be recalled that a recessive trait makes itself manifest only when the factors for recessiveness are combined in the germ-plasm, uncomplicated by the presence of the opposite factors; and hence that the recessive traits always "breed true." This explains the report that where two persons both of whom are insane are mated, their offspring all become insane. It is obvious, then, that the question of selection of a marriage partner for persons in whose family there is a strain of insanity is a highly important one.

Mendelian heredity explains how it is possible that, in a fraternity whose parents were "mixed dominants" as regards the factors for mental instability, one individual may inherit a perfectly sound and normal nervous system, whereas his brother, even a twin, may inherit a nervous system so unstable as to invite overthrow. Unfortunately, a recessive trait, in the case of a "mixed dominant," may be so completely submerged that it gives no manifestation whatever of its presence; yet it will come to the surface no less surely if this person marries with another "mixed dominant"; so the only safe rule where there is known to be insanity in the family heritage is to avoid marrying into another family having a like defect.

It is obvious that cousin marriages under these circumstances would be peculiarly hazardous. With reference to consanguinity, there is no reason why it should not be practiced if there is absolutely no hereditary strain on either side; but if there is, it is brought out more forcibly in the offspring. This subject of heredity is one of such tremendous importance that no man could attempt to discuss it at length in one paper, and I am unable to suppress the wish that in the future this great subject may often be presented here for consideration.

RURAL HYGIENE.

D. C. Absher, M.D., Henderson, N. C.

The subject of this paper is "Rural Hygiene," but in considering anything rural, let us understand that rural people are just like the rest of us, human beings. They differ from us chiefly in the fact that they are more independent. They live farther from one another, and each man's problem is, therefore, more of an individual problem.

It has been well said, that "God made the country, and man made the town." Therefore, in discussing this subject, I believe that we are considering the most important and, in North Carolina, the fundamental health problem.

North Carolina is preëminently a rural State, but the farmer and his good wife have been so much praised and so long considered the backbone of the Nation that they need no further praises from me. When we go to the city, we find the country boys in charge; the men in control of the affairs of the Nation were country boys. With these facts in mind, I am convinced that just as soon as the rural sanitary conditions are made right, the city sanitary conditions will very nearly right themselves, although every one who has had public health experience knows that rural work is largely persuasive, while city work is accomplished through ordinances.

In the country the homes are usually isolated; each family, therefore, has only its own flies. In the city they have some of their neighbors' flies also. If the man in the country wants filth, flies, and disease, he is entitled to them, for usually his own family must be the ones to pay the penalty. In the city the same man could not so easily confine his filth, flies, and disease to his own home; he therefore becomes dangerous to his neighbors and must be ruled by ordinances. In the rural community,

sanitation is not only a health question, but it becomes an educational and sociological question as well. In other words, sanitary conditions can be more easily improved while other community problems are being worked out. When the country boy is taught as well as trained as to the proper method of disposing of human excrement, he will not have to be forced so much when he moves to the city, and, incidentally, both the rural and the urban death rates will be lowered and we will have accomplished, in part, what Benjamin Franklin referred to in 1788 when in writing to a friend he said: "I have sometimes almost wished it had been my destiny to be born two or three centuries hence, for invention and improvement are prolific, and beget more of their kind. The present progress is rapid. Many inventions of great importance now unthought of will before that period be produced; and then I might not only enjoy their advantages, but have my curiosity gratified in knowing what they are to be. . . . One reason more for such a wish, which is that, if the art of physic shall be improved in proportion to other arts, we may then be able to avoid disease and live as long as the patriarchs in Genesis, to which I suppose we should have little objection." If that great statesman and scientist could visit this world today, he would no doubt be gratified, if not surprised, at the discoveries and inventions that have been made since his day. With the discovery of the specific organisms of many diseases naturally have come the discovery of means of avoiding them and preventing their spread, so that today we find the average length of life is being increased. May we hope that some day poor Richard's dream will be realized.

One of the biggest problems in rural hygiene is that of properly disposing of human excrement. It is surprising to observe the large percentage of people in rural districts who are without privies of any kind. When one is found, it is usually of the open surface type, offering free access to flies, as well as to the pigs and chickens. By way of parenthesis, it might be said that even worse conditions are found in the average small town. In most counties we find the great majority of schools without privies. At the homes, then, how simple it is for typhoid and dysentery to be carried to every member of the family by the flies, whenever the germs are deposited in such privies, or out of them. How easy is the spread of hookworm disease at schoolhouses unprovided with some type of improved privy. The installation of some improved type of privy is, then, one of the fundamental steps in sanitating a rural community. The simplest privy to construct and the easiest to care for is the "pit privy." It is far from perfect, but it is unquestionably an improvement. It can easily be made fly-tight, and can be built at very

small cost, so that the poorest family can have one, and the poorest county can have two in each school. In the county of Vance work of installing two of these closets, one for boys and one for girls, at every schoolhouse, white and colored, in the county, is now in progress. Of course, to get such work done it is necessary to have the coöperation of a progressive county superintendent of education and a progressive board of education.

As to the privies themselves, the pits should not be more than four feet deep. The wall of the closet should go to the ground on all sides, and the dirt should be banked against the walls so as to prevent rain-water running in. Lids should be fitted over the holes and everything should be done to make the pit fly-tight. The beauty about such a closet is that there is very little odor, and it is never necessary to clean out the pit. Instead of cleaning, when it becomes filled to within a foot of the top of the ground, a new pit is dug, the closet moved and the old pit filled up, thus effectually burying the excrement. I do not believe that this type of privy is adaptable to limestone sections, but in sandy soil it is admirable.

Proper ventilation of country homes and schools is a question of great importance. We would think that there, where fresh air and sunshine are so plentiful and free, the people would take advantage of the opportunity and breathe fresh air at all times, but how often do we find three or four persons sleeping in the same room, with every door and window closed! Especially is this true of negroes. The high death rate among them from tuberculosis is too well known to this body to need iteration, but, in this connection, I wonder how many of our profession sometimes call pulmonary tuberculosis asthma, in order not to frighten the patient?

There are those who believe that the health of the negro race is of very little importance, but even from a selfish standpoint it is a very important question. I find that negroes respond very readily to public health work, and I am convinced that when we lower the death rate from tuberculosis among them we will have fewer cases of that disease among those of our own race. The two races are living in the same country and we cannot disregard the facts, no matter what our sentiments, "for none of us liveth to himself, and no man dieth to himself."

In public health work, in a rural community, the school is the strategic as well as the most important point, for in a few years the pupils will be the men and women of our country. Not every person is able to interest school children, but when the right methods are employed it is usually easy to get the children to study hygiene; that done, the next step is to get them to *practice* hygiene; to use individual drinking cups; to keep

their teeth clean, and to avoid putting such things as pencils, etc., into their mouths, etc., etc. The school children should also be examined for physical defects, such as decayed teeth, adenoids, enlarged tonsils, and defective vision. When defects are found, the case is referred to the family physician. With these things done in the schools, we are able not only to help the children, but through them we reach many of the parents.

The control of the so-called contagious diseases is another important phase of rural hygiene, but that side is worthy of separate discussion, and I shall leave that to the care of others.

Perfection is a long way off, but with the coming into power of the next generation of *taught* children, let us hope for better things in rural hygiene.

We have heard the praises of our profession for the noble work of some of our members in ferreting out the cause of a number of diseases, and the unselfishness of our profession as a whole in standing by and helping to prevent disease. I have not yet heard of any member of our profession starving because of any such efforts! The public health forces of our State are small, and there is yet much to do. I would just like to say, therefore, in closing, that there is need in every county of the fullest coöperation from the profession in working out this fundamental question of rural hygiene. It is a work in line with the ethics of our profession; in line with our desires for our own families; in line with the noblest sentiments of the human soul. The medical profession has done much; we can do more, and here's to the best that's in us for North Carolina!

Dr. Ben. K. Hays, Oxford: In regard to the improvement of the school closets, who furnishes the money? Is that done by the committee, by local, State, or county appropriation?

Dr. Absher: On last Monday I presented this to the county board of education and they made an appropriation of $400 or $500.

BUSINESS SESSION.

THURSDAY MORNING, JUNE 17.

REPORT OF COMMITTEE ON RECOMMENDATIONS OF PRESIDENT'S ADDRESS.

We, your committee appointed to consider the various important recommendations carried in the president's address and to report back to the society, beg leave to report as follows:

We recommend that the society adopt the suggestion of the president that we place the file of the "Transactions" in the State Library in Raleigh. This, to our minds, is the only feasible plan for the preservation of our records. Were this file lost, there is great probability of its never being replaced.

The society is under great obligation to Dr. Walter C. Murphy of Washington, D. C., for so generously donating these records to complete our files, and we recommend that this society go on record with a resolution thanking him for so favoring us in our almost impossible task of collecting a complete file of our "Transactions."

We further recommend that the recommendation be adopted relative to the incoming secretary compiling a complete roster of all legally qualified practitioners of medicine in the State, and that he furnish a list to the collectors of internal revenue, and that the various officers of the State society be instructed to render any additional assistance to the internal revenue collectors that may be necessary for the proper enforcement of the narcotics law.

As to the additional committee of three to coöperate with the Committee on Public Policy and Legislation with the express purpose in view of bringing the narcotic laws to the attention of the laity and to the next General Assembly, we recommend that this committee be named by the president. "In numbers there is strength" will be amply demonstrated in this case, and more strength will result from the appointment of such able men as the president will name.

We recommend the adoption of the ideas of the president to abolish the old Section on Jurisprudence and State Medicine and the recently created Section on School Hygiene and Rural Sanitation, and in their places the adoption of a Section on Public Health and Instruction. We further recommend that the papers coming under this section be arranged to be read either just before or after the conjoint meeting of the State

Board of Health and the State Medical Society. Our reason for making this arrangement is that the subjects are identical.

We cannot close without paying a tribute to the high character of the president's address and the wise suggestions embodied therein, and feel that our task would be incomplete were we not to congratulate the society upon having for its president for this year such an able man as Dr. Lewis B. McBrayer.

J. Howell Way,
Chas. O'H. Laughinghouse,
K. P. B. Bonner,
Committee.

Dr. Ben. K. Hays: I move that this report be accepted and the resolutions adopted by the society as a whole.

Motion seconded and carried.

EXPRESSIONS OF SYMPATHY.

Motion by Dr. Cyrus Thompson: When the Secretary of State resigned from his great office and subjected himself to criticism of very great variety the newspapers carried the statement that on leaving his office and the employees of it he addressed some words of farewell to them. He said, briefly, that the pleasures of life did not consist in the money a man might make nor in the honors that might be conferred upon him, but rather in the abundance of love which a man might feel for his fellows. I know we come here for business; but business, after all, as the great secretary has substantially said, is one of the poorest things in the world. The man without sentiment, even though he possessed all the riches of the world, would be a pauper.

Now, sir, many of us when we came to this meeting expected to greet many of our old friends. Some of them are not here. It comes to my attention this morning that Dr. George W. Long of Graham, whom we expected to meet and the older of us knew and loved, is not here because of his enforced absence through affliction in a hospital in the town of Salisbury. It is a little sentimental, but it is sweet, and withal it seems to be a seemly thing for us to do, and therefore I move you, sir, that the secretary be directed to express to Dr. Long the sympathy of this society for him in his suffering and our hopes for a speedy recovery out of his affliction.

Dr. G. T. Sikes, Grissom: I move that we incorporate Dr. S. D. Booth in that motion.

Motion seconded and carried.

TIME OF NEXT MEETING.

Dr. Charles O'H. Laughinghouse, Greenville: Mr. President, permit me to bring to the attention of the society the fact that the time for its next meeting has not yet been decided upon; therefore, I am suggesting that now is a good time to set a date for the meeting of the society for 1916. The idea of changing the date of our meeting, I am informed, has arisen from the fact that it conflicts with the date for the meeting of the American Medical Association. Any date that would not conflict with the American Medical Association meeting, or something of equal importance, seems to me worth suggesting.

Dr. C. W. Moseley, Greensboro: I would like to move, then, that in order not to conflict with the American Medical Association, our meeting be held beginning the first Tuesday in June, 1916.

Dr. H. A. Royster, Raleigh: The motion of Dr. Moseley would not attain that desire. That is about the regular meeting time—the second Tuesday in June. They sometimes meet the first Tuesday and sometimes the third Tuesday. It depends largely on where they meet. Hereafter the Board of Medical Examiners will not meet at or near the time of the State society, but probably the middle or last of June. They will always meet in Raleigh, and not move around the State. We believe it would be proper for the society to change its meeting period to any time it pleases. The further back you go to the spring the better the attendance will be, I think. The dullest time in North Carolina is in April. I spoke to over a hundred doctors in the past twelve months, and every one of them said the dullest time was April. The society formerly met in April, then May, then in June. I move that it meet the second Tuesday in April.

Dr. M. H. Fletcher, Asheville: I want the society to come to Asheville. We do not want to make this a fixed date. Next year we don't object to meeting down here in April or May, but when we go to the mountains it might be well to make it a permanent meeting place, like some of the other associations do who get tired of this hot country. Why not come up in May or June, and don't fix the time definitely? Fix the time for next year, and leave the other times open.

Dr. Royster's motion seconded, second Tuesday in April.

Dr. Cyrus Thompson, Jacksonville: I think that's a little early. We are hardly out of our pneumonia season as early as the first of April. I think a later date in April would be better, and I am going to amend Dr. Royster's motion to the third Tuesday in April.

Dr. Royster: I accept that.

Dr. L. B. McBrayer: The motion is, the next meeting to be held the third Tuesday in April, 1916.

Motion seconded and carried.

OFFICERS AND COMMITTEES.

Dr. McBrayer announced the appointment of the following committees:

Committee on Conservation of Vision—Dr. R. H. Lewis, chairman; Dr. W. S. Rankin, Mr. John E. Ray, Dr. C. W. Banner, Dr. Louise Merrimon Perry.

Committee on Narcotics—Dr. Charles O'H. Laughinghouse, Dr. W. S. Rankin, Dr. J. T. J. Battle.

Dr. John A. Ferrell: The report of the Nominating Committee as presented to the House of Delegates was accepted, and is as follows:

President—M. H. Fletcher, Asheville.
First Vice President—J. L. Nicholson, Richlands.
Second Vice President—L. N. Glenn, Gastonia.
Third Vice President—W. H. Hardison, Creswell.
Secretary—B. K. Hays, Oxford.
Treasurer—W. M. Jones, Greensboro.

Committee on Scientific Work—W. DeB. MacNider, Chapel Hill; William T. Carstarphen, Wake Forest; B. K. Hays, Oxford.

Committee on Public Policy and Legislation—J. M. Parrott, Kinston; J. M. Templeton, Cary; L. B. McBrayer, Sanatorium.

Committee on Publication—Charles S. Mangum, Chapel Hill; J. P. Monroe, Sanford.

Committee on Obituaries—A. W. Knox, Raleigh; E. G. Moore, Elm City; I. W. Faison, Charlotte.

Finance Committee—Carl Reynolds, Asheville; Joseph F. McKay, Buies Creek; L. D. Wharton, Smithfield.

Committee on Arrangements—M. N. King, Durham, chairman.

Delegates to Virginia Medical Society—S. F. Pfohl, Winston-Salem; W. H. Ward, Plymouth, alternate; I. M. Taylor, Morganton; E. J. Wood, Wilmington, alternate.

Delegates to the Medical Society of South Carolina—R. F. Leinbach, Charlotte; B. F. McMillan, Red Springs; L. B. Morse, Hendersonville; R. L. Payne, Monroe, alternate.

Place of meeting: Durham, N. C.

Dr. G. T. Sikes, Grissom: I move that we accept the report.

Motion seconded and carried.

Dr. Ferrell: We have usually one, two, or three men in addition to those who are usually named as delegates to Virginia or South Carolina, and it was suggested that any representative of the society who finds himself able to attend the meetings of the societies of the adjoining States may be given credentials by the president and secretary of the society as a delegate from this society.

Dr. McBrayer: The new finance committee will please transfer the books and cash on hand from the retiring treasurer to the incoming treasurer.

Is there anything else to come before the society before we install the officers?

Dr. Ferrell: Resolution of thanks to Greensboro.

Dr. McBrayer: I will ask Dr. Cyrus Thompson to prepare a resolution of thanks to Greensboro and any one else he thinks advisable.

I will ask Dr. Battle and Dr. Sikes to present the president-elect.

ADDRESS OF Dr. McBRAYER ON RETIRING FROM OFFICE OF PRESIDENT.

I desire to say, in retiring from the office, that this has been the largest meeting in the history of the society. The registration already shows that. If there is any one who has not registered, I would be glad to have him do so.

If the important constructive measures for the benefit of the people of our State that have been set in motion by this society during this session shall be followed up and continued I shall feel amply repaid for all the work I have done.

It gives me great pleasure, on retiring from the office of president of the Medical Society of the State of North Carolina, to present to you your new president, Dr. M. H. Fletcher of Asheville, my friend.

ADDRESS BY PRESIDENT-ELECT M. H. FLETCHER, ASHEVILLE.

I approach this office with two feelings. One is a deep sense of gratitude and the other is a sense of my incompetence. Now, if you will help me out and sustain me in this office, I may overcome partly my incompetence. For my gratitude, let me say I will simply do the best I can, and I assure you that I appreciate the fact that the highest honor that can

come to any medical man in North Carolina is to be president of the State Medical Society, and with that feeling I approach the office. I thank you, gentlemen.

Dr. Fletcher: I will ask Dr. Laughinghouse to escort the incoming secretary up to the stage.

Dr. Laughinghouse: I introduce Dr. B. K. Hays, the new secretary.

RESOLUTION OF THANKS TO GREENSBORO.

Dr. Cyrus Thompson, Jacksonville: I do not know, sir, what inclined the retiring president to impose this duty upon me, except it be what has been very evident to the society, that I have been unusually quiet during all its deliberations. I suppose he simply wanted to give me an opportunity to say something in order to prove to the society that I have not lost the power of speech.

I want to say, sir, that this, in my estimation, has been one of the most successful meetings that the society has ever held within my knowledge of it. I want to say that it has been well attended, the papers of remarkable excellence, and the weather has been pretty good. It hasn't rained much; and, indeed, it may be said that we have been exceedingly dry. I remember, sir—and I break no secret when I say that there is a wonderful contrast in what we have seen at the meeting of the society on this occasion and what we saw when we met in the city of Charlotte nine years ago. We were delightfully entertained at that time, but many of us grew unconscious of it. Everything goes by fashion, and even water becomes fashionable now. Only a few years ago, if a man had presented a prohibition plank before the North Carolina State Medical Society, he would have been turned out with contempt as too weak for our tolerance. We would have called for something stronger than grape juice, or nothing at all. I believe, indeed, that this is true, that once the W. C. T. U. in North Carolina did ask the State Medical Society, meeting in the town of Winston, to give its professional indorsement to its temperance view, and the matter was laid upon the table—turned down with absolute contempt; and one member of considerable prominence felt that we had been insulted. Why, we have changed mightily in a few short years, and all our progress comes by the patent-medicine process of advertising. Indeed, "It always pays to advertise if you've got the goods," and of course you've got the goods if you are advertising water. Now, then, whether it is true every member of the society meant it or not when we went on record last year at Raleigh, I don't know, but I do know that still a little bit can be got, and when it's got in such small quantities it's held in very great esteem and it can't hurt much. I am somewhat of a poet myself,

a poet of nature in a dry time; so I'm going to read you a bit of poetry from the *Charlotte Observer's* Monday poet, a serious sonnet:

"Majestic Quart! how thou hast grown to be
A measure of importance in our State!
Contemptuous in the statesman's eye, of late
By statesmanship thou hast become a sea.
Denial's magnifying-glass decree
Hath in the eyes of scorners made thee great;
And twice each month they will negotiate
For thee, thou remnant of our libertee.

"And so, loom large, thou splendid package size,
Thou thirty-two-ounce oasis sublime!
Thou art a handy thing, and cheap withal,
And every freeman thee will greatly prize,
Both for thyself, and relic of the time
When we had gallons at our beck and call."

I didn't write that; but I had in mind the poor fellow who couldn't get his quart when his gallon was gone—lived too far away from an express office for so little—and then I got this off under the caption of "A Lost Measure." No physician now can speak of things by the gallon, only by the dram, and at most by the quart; and so I said:

My gallon's gone. Good-bye, old gal,
Wild charmer of my days and nights,
Thou cause of headache and of fights,
Good-bye, sweet thing, my liquid pal!

I fondly guzzled thy deep neck,
And gained from thee a spurious strength
To dare and do beyond my length,
Nor dreamed that drinking men would wreck

The life we led: a sad farewell!
I cannot now hilarious snort
When love's expressed just by the quart
Through legislation rash and fell.

With watery throat and tearful eye
And thirst as parching as the dust,
I'm hence condemned to water-lust:
My gallon's gone: old gal, good-bye!

But, sir, in all this condition, for a man who believes that the best thing in life is an ideal; for a society that believes that the best thing in life is an ideal; for those who believe in the uplift and the upbuilding of men and women; that, while we were created a little lower than the angels, we are always getting nearer to the angels; that society must be interpreted in terms of social service—I'll tell you, a man who has an

ideal like this, and the society that has an ideal like this, prefers the conditions we are meeting in Greensboro on this occasion to the meeting some time ago in Charlotte. I tell you this kind of thing is becoming fashionable through advertising. Advertising is leading us on to a great degree of respectability and to a wonderful degree of helpful success and development. I just wanted to say that much because it is my custom to say something.

In all our meetings, wherever we have met, we have been hospitably entertained. We have never been entertained better than on this occasion. Why, they took us out to the State Normal, and notwithstanding the session was over, it seemed they had saved some three or four hundred girls to serve us at the dinner there. There wasn't one of those girls who complained of anything. And usually, to our profession, complaining women are the most profitably interesting. But they all greatly interested us. Two of them made themselves known to me and seemed to be kind and considerate of me, notwithstanding my age. Dr. Foust showed us the wonderful things that the State of North Carolina in that magnificent institution is doing to make a strong maternal heredity for a great race of men and women afterward. Folks talk much about heredity these days. Let me state this fact to you, that heredity and environment make every living thing what it is; and every living thing that is makes heredity for what follows after it. Heredity is nothing but concrete environment, a habit fixed by past environment, which, if it is bad, parents and teachers and preachers and doctors and all good people should begin right now to undo and make a good heredity at last for those that follow after.

Everybody in the town of Greensboro has been delightfully pleasant to us, and I feel that it is good to be here. It is a wonderfully nice place, this town of Greensboro. Dr. Long has been kind, and all the local profession, and everybody has been kind, and we ought to rise up as one man and tell them we thank them out of the bottom of our hearts and say, "God bless you, Greensboro, and everybody in Greensboro."

Dr. Ben. K. Hays, Oxford:

> There was a young man named Thompson,
> Whom we never have to prompt some.
> As a speaker of thanks
> He leads our ranks,
> This eloquent, uproarious Thompson.

Dr. Fletcher: A motion is in order to adjourn.

Dr. G. T. Sikes, Grissom: I move that we adjourn, to meet in Durham the third Tuesday in April, 1916.

Motion seconded and carried.

MEMORIAL EXERCISES.

REPORT OF COMMITTEE ON OBITUARIES.

To the President and Members of the Medical Society, State of North Carolina:

In gathering together the list of deaths during the past year we find that Death, "the greatest of all terrors," has not been less active during the past year than in previous years. We report as follows:

Dr. R. H. Bradford of Burgaw died November 29, 1914. The *Wilmington Star* gives the following account:

Dr. R. H. Bradford, a prominent young physician of Burgaw, died last evening at 5:55 o'clock at the James Walker Memorial Hospital, where he underwent an operation for appendicitis three weeks ago. He recovered nicely from the first operation and was able to return to his home Monday night. He suffered a relapse and was brought back to the hospital Tuesday evening and underwent a second operation yesterday morning for intestinal trouble. He never rallied and passed peacefully away yesterday afternoon.

The deceased was a man who numbered his friends by the number of his acquaintances, and the news of his death will be received with deep regret by a host of friends throughout the State.

Dr. Bradford was a native of Mecklenburg County, and was 36 years old. After graduating in medicine from the North Carolina Medical College at Charlotte, he came to Burgaw, where he had lived for the past nine years. He was a most successful physician, a devout Christian, being an elder in the Presbyterian Church, and in all things tried to do his duty faithfully and well.

He was married seven years ago to Miss Elizabeth Whitehead of Scotland Neck, who with one child survives him. Surviving him also are four brothers, Messrs. N. E. Bradford, of Goldsboro; Jerome Bradford, Asheville; Leslie and J. B. Bradford, of Charlotte, and four sisters, Mrs. H. F. Beaty of Mooresville; Misses Janie and Florence Bradford of Charlotte, and Miss Katherine Bradford of Concord. They will have the tender sympathy of many friends in their sad bereavement.

Dr. J. M. Candler of Dillsboro, N. C., born August 31, 1846; died April 15, 1915. Dr. Candler was an active practitioner in western North Carolina for about fifty years, doing the hardest kind of professional work among the people of the mountain section, and his death will be a personal loss to a host of friends.

Dr. R. Sydney Cauthen of Charlotte died March 24, 1915. He was born in 1870, graduated at Baltimore Medical College in 1902, was in

general practice in Kershaw, S. C., for eight years, then took special work in Chicago and later a year in Vienna, and for four years, up to the time of his death, practiced eye, ear, nose, and throat in Charlotte, N. C. He was a member of the American Medical Association, Southern Medical Association, and State, Seventh District, and County Medical Associations. Was on the staff of Presbyterian Hospital, Charlotte. Was a member of Knights of Pythias and a steward in Trinity Methodist Church. Age at death, 45. Burial in Charlotte.

Dr. C. F. Dowd of Willow Springs died November 26, 1914. A correspondent writes the *News and Observer* as follows concerning the deceased:

The funeral services of Dr. C. F. Dowd, who died Thursday night was held Friday p. m. at 4 o'clock. The services were conducted by Rev. W. McC. White of Raleigh.

Dr. Dowd was 74 years of age and had spent the most of his life near this place. At an early age he entered the State University, where he graduated with first honors. He was also a graduate of the Pennsylvania School of Medicine.

For many years he enjoyed a large practice in this and adjoining counties until his three score years called upon him to cease work. He had suffered for many years from an acute disease, but it was only two weeks ago the worst came.

Dr. Dowd was a man of great intellectual ability, lover of truth and right, and a staunch believer in the great faith preached by his father, who was a noted Baptist minister.

A large crowd of friends followed the remains to the last resting place, which is near the old home.

Dr. John M. Faison of Faison died April 21, 1915, at the age of 55. Congressman for a term of years. A special dispatch from Warsaw under date of April 21 gives the following account:

News reached here at an early hour today of the death by suicide of Dr. John M. Faison, ex-Congressman from the Sixth District, which occurred at the home of the deceased about 8 o'clock this morning.

Shortly before 8 o'clock Dr. Faison, who was a very strong man until his health began to decline while in Congress, about a year ago, had been out transacting some business connected with his farm. He then went into the house and, entering a small room adjoining his bed-room, took his life by placing the muzzle of a shotgun into his mouth and setting off the charge with his foot, it is supposed.

No one seems to have heard the noise of the explosion, and his death, which was instantaneous, was discovered by the cook, who entered his room to summon him to breakfast. Mrs. Faison was away, attending commencement exercises at Wallace, where a daughter teaches in the graded schools.

Dr. Faison was about 55 years old, and since early manhood had been actively and successfully engaged in the practice of medicine at Faison, his home town. He was of a prominent family, and has held several positions of trust in his county, including county commissioner for a number of years. He was a man much esteemed and admired by a host of friends in this section.

In 1910 Dr. Faison was nominated on the Democratic ticket and elected to Congress from this the Third North Carolina District, which position he held until, his health having failed last year, he refused to make efforts for renomination, and was replaced by Mr. George E. Hood of Goldsboro.

A widow, four sons, two daughters, two brothers, and two sisters, survive him, and he will be much missed by his many friends in this section, to whom he was affectionately known as "Dr. John." So far as is known, he gave no intimation of suicidal purpose, and the theory is that his constantly failing health brought on a despondent state of mind and his act of self-destruction.

Dr. Frank H. Holmes of Clinton died at Asheville, N. C.

The only history of a country worthy of being recorded is the biographical, the history of its men and women. That community attains a high place in written records which holds in endearment the memory of a great man. Such a man was Frank H. Holmes. He was truly one of God's noblemen. His place in the profession in eastern North Carolina will not be filled in a generation.

He was born in Clinton, North Carolina, February 26, 1870, and died in Asheville, April 18, 1915. He had, therefore, just rounded his 45th year. Called in the prime of life, he laid down his armor without a murmur.

Dr. Holmes was the son of Dr. Allmand Holmes, who was for nearly fifty years one of the foremost surgeons of the State. His mother was Miss Fannie Sillars, of one of the finest families of the Old South. Her life has been peculiarly a sad one. The last of her own family, Colonel Sillars, being killed with the Army of Virginia in 1865; mother of a family of five children, all reaching maturity, she still survives them all at the age of 80; Dr. Holmes being the last child to go.

Dr. Holmes graduated from the University of Maryland in 1895, taking his first two years in medicine at Chapel Hill. He located in his home town, Clinton, where he soon achieved success in medicine and established a brilliant reputation as a surgeon. In October, 1900, he was married to Miss Sallie Lee McKinnon of Clinton, only daughter of Rev. Dr. and Mrs. Luther McKinnon. One son was born to them, who died in infancy after an illness of only one week.

He took an active part in the affairs of his town and county. He had served a term as superintendent of health of Sampson County and one term as an alderman for the town of Clinton. He was always to be found among the hard workers for the progress of his community. At

the time of his death he was a member of the Committee on Constitution and By-Laws of the North Carolina Medical Society. He never sought honors at the hands of his fellow physicians. He despised sham and hypocrisy above all things.

The subject of this sketch was for eight years a major surgeon in the State Guard. He was first appointed by his friend, the late Governor Aycock, reappointed by Governor Glenn, and offered a third consecutive appointment by Governor Kitchin, but declined because the duties had become too arduous for his frail health.

He continued in active practice, the leading physician of Sampson County, until stricken by disease on December 20, 1914, from which illness he never rallied. Early in February of this year he was carried to Asheville by the writer of this sketch and his wife, who was indeed faithful unto death. There in the "Land of the Sky," surrounded by all the comforts that loving hands and medical skill could provide, he "met his Pilot face to face." On a peaceful spring Sabbath, as the sun sank from sight behind the eternal hills, his beautiful spirit went out into the realms of immortality. His going was as peaceful as the "sinking of a summer sun." Conscious, and resigned to the will of the "Master of all good workmen," he died as he had lived—a man.

His remains were conveyed to Clinton, where on Tuesday afternoon, April 20th, amid a great concourse of sorrowing friends, all that was mortal of this lovable man was laid to rest by the side of his fathers. The Sampson County Medical Society and the Clinton Bar Association attended his burial in a body. Most of the business houses in the town were closed as a mark of respect.

As the great wave of sincere grief swept over that gathering, one could not be unmindful of the words of Lord Byron, "He had kept the whiteness of his soul, and thus men o'er him wept."

With this broken tribute I close, trusting that He who said "Come unto me, all ye that labor and are heavy laden, and I will give you rest," may comfort the aged mother and the heartbroken wife.—*G. M. Cooper.*

Dr. J. T. Johnson of Hickory died December 24, 1914. The following account is given in a special dispatch to the *News and Observer:*

Dr. J. T. Johnson, one of Hickory's oldest and best known physicians, died yesterday, his death being caused by pneumonia. Had he lived until March 31, he would have been 79 years of age. He had been seriously ill since Tuesday. He is survived by his wife, Mrs. Sue Warlick Johnson, and two daughters, Misses Mamie Sue and Effie Johnson.

Dr. Johnson entered the Civil War in March, 1861, being elected second lieutenant of Company K, Thirty-fifth North Carolina Regiment, half of

which company was made up from Catawba and the other half from Burke County. At Raleigh, when they were formed into the regiment, Dr. J. R. Ellis, who had been elected captain at the organization of the company, was elected assistant surgeon of the regiment. This left the captaincy vacant, and Dr. Johnson was chosen to fill this place.

About three or four months later the regiment was reorganized, and Dr. Johnson was reëlected captain. One year later, on the battle-field of Fredericksburg, he was promoted to major and given half the regiment and sent to the front picket line. Promotions to lieutenant colonel and later to colonel followed, and he was given a regiment, which he commanded until the close of the war. He was captured at the battle of Five Forks, April 1, 1865, and carried to Johnson's Island, Ohio. He was released and returned home in June, 1865.

He was in a great many hard fought battles. Wounded in the leg at the battle of Malvern Hill, received a bad wound on the top of his head. He was also wounded in the leg at the battle of Bermuda Hundred.

Since the war he had made his home in Hickory and had practiced medicine. He was a member of the First Methodist Church and was for a long time superintendent of the Sunday-school. He was an active churchman.

Dr. William J. Lumsden of Elizabeth City died October 14, 1914. A special dispatch to the *News and Observer* says:

Dr. William J. Lumsden died this afternoon at 1:15, after an illness of three days, the result of a stroke of paralysis which he sustained Sunday night at 9 o'clock. Funeral services will be conducted from the Methodist Church at 4 o'clock Friday afternoon by Rev. G. F. Smith; interment in Hollywood Cemetery.

Dr. Lumsden was 68 years old and was one of the most active men in the community until the spring of 1912, when he was the victim of a fall which so crippled him that he was forced to retire from active life, giving up a big practice. He was able to walk with crutches after the accident, but Elizabeth City saw little of him, as he seldom ever left home, except to take an occasional automobile ride, and this was the last thing that he ever did. He and his wife were taken by a friend on a long automobile trip last Sunday afternoon to Hertford and Edenton. He seemed to enjoy the trip and was in the best of spirits when he returned home; but in less than three hours he had become paralyzed, passing into a state of coma from which he never regained consciousness. During his two years of illness he was always bright and cheerful, always patient in his afflictions, and it was a treat to his intimate friends to visit him and spend hours in social intercourse.

Dr. Lumsden was born in Greensboro, and first saw Elizabeth City in the year of 1858. His father, Rev. J. D. Lumsden, was a Methodist minister and was sent to Elizabeth City by his Conference. When the Civil War began he was 16 years old. He ran away from school and enlisted in the Confederate Army, but soon after his enlistment was taken ill and his father took him from the army on account of his age and sent him to the Virginia Military Institute. He was with the V. M. I. cadets in the memorable battle of New Market on April 15, 1864, and at Richmond at the evacuation. From Richmond he worked

his way to Greensboro and joined General Johnson. After the surrender, he returned to Elizabeth City. His father was engaged in farming in the lower part of Pasquotank County, and he joined his father on the farm. He taught school for some time in Pasquotank County and at South Mills. He then went to Hertford and studied medicine under Dr. Smith, then entered the University of Maryland and graduated in the year 1872, returned to Elizabeth City and spent his life here in the practice of medicine. He was married in 1874 to Miss Sarah L. Kennedy of Pasquotank County.

During the forty years of his continuous practice he became one of the most learned surgeons and physicians in eastern North Carolina and the most beloved physician in this section. As a physician and surgeon during the past forty years he endeared himself to thousands of men, women, and children.

Dr. Theodore F. Misenheimer of Morven, N. C., died at his home May 26, 1915, of pneumonia. He would have been 63 years of age July 12th. He was educated at Mount Pleasant Seminary; read medicine under Dr. Paul Barrier of Cabarrus County; entered New York University in 1875, graduating with honor and distinction after spending four years there. His first practice was at Big Lick, Stanly County, and after a few years he came to Morven, in December, 1882, he being the first practicing physician to locate there. On February 14, 1883, he was married to Miss Nannie B. Abercrombie, daughter of Mrs. Winey Dunlap Allen. Dr. Misenheimer was regarded by many as one of the most skillful physicians in this section and was eminently successful in his profession for over thirty-five years. He is survived by a wife and one daughter.

Dr. Elbert Alfred Moye, Jr., the eldest son of Elbert Alfred Moye and Mary Louise Edwards, was born near Farmville, Pitt County, North Carolina, July 14, 1869.

He received his preparatory education at Davis's School, LaGrange, N. C.; completed a business course at Lexington, Kentucky; graduated at the University of North Carolina, and received his diploma to practice medicine from the Jefferson Medical College in 1895.

He was one of five, out of a class of two hundred, to be selected as an interne for Jefferson Hospital, which position he filled with credit to himself and to the institution he served.

He obtained license from the Board of Medical Examiners of Virginia and North Carolina in 1895, he and Dr. Murphey receiving 98, the highest mark given by North Carolina's board that year. He located for his life's work in Greenville in 1896, rapidly acquiring a most satisfactory practice.

He married Miss Hortense Forbes in 1897. Four children blessed this union—Elbert Alfred, Jr., Robert Orville, Clara Louise, and James McKinney. He associated himself in the practice of medicine with Dr. Charles O'H. Laughinghouse in 1902, which copartnership was dissolved in 1908 on account of Dr. Moye's failing health.

After resting a year, he resumed practice; operating Moye's Pharmacy in connection with his practice from 1910 to 1912. His health compelled him to again retire from practice in 1912, at which time he sold his practice and pharmacy to Dr. T. G. Basnight. From 1912 he devoted his time to the management of his business affairs, until July 8, 1914, the date of his death.

He was strenuously energetic, aggressively progressive, possessing the remarkable capacity for winning to himself the things he most desired. He made friends and kept them, and always wielded a powerful influence over his surroundings. At college he was prominent as a leader, in the class-room, in college life, and in athletics.

Besides the influence he wielded in his profession, he was prominent in politics, a director of two banks, owner of large interests in the Greenville Knitting Mills, and controlling interest in the Greenville Manufacturing Company. He was interested largely in mercantile firms, and owned and operated several farms.

His early death was the profession's loss and nothing less than a blow to his community's progress.—*Chas. O'H. Laughinghouse.*

Dr. Calvin J. Parlier of Blowing Rock died at the Charlotte Sanatorium December 17, 1914. The following account is taken from the *Charlotte News:*

Dr. Calvin J. Parlier died last night a 11 o'clock at the Charlotte Sanatorium and the remains were taken this morning to Moravian Falls, Wilkes County, for interment.

Dr. Parlier had been a sufferer for a year with high blood pressure and hardening arteries. He came to the Sanatorium a year ago for treatment and returned here in November. He was able to walk when he came, but he could not, nor could his skilled colleagues who ministered unto him, master the disease which was upon him. He progressed slowly and surely toward the inevitable.

Yesterday marked the final change. Each minute death was imminent. At 11 o'clock the end came. With him, besides physicians and friends at the Sanatorium was Mrs. R. L. Scroggs, a sister. Dr. Parlier was a native of Wilkes and spent the greater part of his life there. Some years ago he went higher up into the mountains, settling at Blowing Rock. He commanded a fine practice in Watauga, Caldwell, and other mountain counties, in each and all being loved as man and esteemed as physician. He was very close to the hearts of the people, and his death is a personal sorrow to

hundreds. He was president of the bank at Blowing Rock and a leading man of affairs in that section. He was unmarried. Surviving him are his mother, several brothers and sisters.

Dr. Charles E. Ross, member Burke County Medical Society, State Medical and American Medical Associations, died April 1, 1915.

The *Charlotte Observer* printed the following concerning the deceased:

The funeral of Dr. Charles E. Ross, a well known Morganton physician, whose death occurred at 2 o'clock yesterday morning at Grace Hospital in that town, will be conducted this afternoon at 1:30 o'clock at the Presbyterian Church at Morganton and interment will occur at the city cemetery.

The news of his death was learned of in Charlotte with deep regret, and it was a painful shock to his relatives. His brother, Mr. James H. Ross, had received Wednesday a letter from Dr. Ross's daughter stating that her father was so much improved that he was able to sit up Monday. Wednesday of last week he was taken ill with a chill and Thursday he entered the hospital.

Dr. Ross was born in Steele Creek Township June 30, 1862, at the old Ross home 2 miles below Steele Creek Church. He was a son of Robert Alexander Ross and Mary Grier Ross, both being members of prominent Mecklenburg families native to that vicinity.

Dr. Ross spent his boyhood years at home and attended neighborhood schools. He then went to college. In 1890 he was graduated in medicine from the University of Maryland. He was married on June 16, 1891, to Miss Kate Lenoir Chambers, a daughter of the late Joseph S. Chambers of Iredell. To them were born four children, Miss Katharine Ross, a teacher in the school at Morganton, Miss Martha Ross, a junior at Agnes Scott, Charles Hill Ross, and Robert Alexander Ross of Morganton. Mrs. Ross died in October, 1913.

Dr. Ross located first for the practice of his profession in Belmont, Gaston County, where he remained only a short time. He then went to Morganton and became a member of the medical staff at the State Hospital. For fifteen years he held this position, displaying marked ability. For the past ten years he had been one of Morganton's most prominent practicing physicians.

Dr. Ross was a man of strong character, an earnest Christian, a model father, and was highly esteemed as a man and as a physician. He was an elder in the Presbyterian Church and was a zealous and useful churchman.

Dr. Frank Havens Russell of Wilmington died June 4, 1915.

The following interesting account is taken from the *Wilmington Star* of June 5, 1915:

The death of no Wilmington physician could bring a greater degree of sorrow to a larger number of hearts than the passing of Dr. Frank Havens Russell, which occurred at 8:30 o'clock last night at his home, No. 115 South Third Street, following an immediate illness of two weeks, death having ensued as the result of a recurrent attack of some cerebral trouble which he first suffered some months ago while on a professional visit to Baltimore, Md., with a patient.

At the time of his first attack it was thought that Dr. Russell could not live, though receiving the attention of the world's greatest specialists in a Baltimore hospital; but he showed wonderful recuperative powers, and soon after his return to Wilmington, after recuperating a month at the home of his friend, Mr. W. B. Cooper, on the Sound, he was able to resume his practice in a limited way, and hundreds of friends expressed the hope that as time wore on he might regain his health permanently. He seemed to improve for a while, but two weeks ago his condition began to grow worse, and the end came last night rather suddenly, while members of his family, a devoted nurse, and two physician friends, Dr. Charles P. Bolles and Dr. Charles T. Harper, were with him.

The news of his death will be received all over the city and elsewhere with the deepest sorrow. He enjoyed perhaps one of the very largest practices in the city, and his acquaintanceship was large. Among all classes and conditions of men he enjoyed a confidence, a respect, and an esteem that was vouchsafed to few men. Naturally retiring in his disposition, he did not strive to be popular nor to enjoy the wide friendship that was his, but those who knew him best were his warmest and most sincere friends. In his death the community loses one of its best citizens and most successful practitioners.

Dr. Russell was born May 6, 1872, and had, therefore, just passed his 43d year. His father is Mr. Thomas B. Russell, now of advanced years and living at Laurinburg, N. C., himself ill and unable to be in Wilmington during the illness of his son. His mother was Miss Fannie B. Havens of Washington, N. C.

Dr. Russell was educated in the schools of Wilmington, and received his first medical instruction at the North Carolina Medical College at Davidson. Afterwards he attended the University of Virginia at Charlottesville, completing his medical education at the University of Maryland, in Baltimore. Later he took extensive post-graduate work at different times in New York and elsewhere. He was devoted to the science of medicine and its practice, losing no opportunity to ground himself thoroughly in all that made for the successful practitioner.

Early in his professional career Dr. Russell married Miss Roberta Lilly, a daughter of the late Mr. Edmond Lilly and Mrs. Lilly, who passed away, after a long residence in Wilmington, a few years since. His wife and three children survive Dr. Russell, the children being Frank H., Jr., about 15 years of age, and little Misses Catherine and Jane Russell, all tenderly devoted to their father. There are also surviving two brothers, Lindsay Russell, Esq., a prominent lawyer of New York City, and Bryan Russell of Quintaque, Tex., and one sister, Mrs. Frank Morse of Washington, N. C. Those who are so deeply bereaved in the death of Dr. Russell have the profound sympathy of a host of friends in their sorrow.

Dr. J. M. Stevens, the oldest practicing physician in Buncombe County, died at the age of 88. He continued in active practice till the date of his death, May 17, 1915. A man of splendid physique, straight as an Indian. Together with seven brothers, served with distinction as soldier and surgeon during the Civil War.

Dr. Roy Vaughan of Durham died January 17, 1915. Graduate of Medical College of Virginia, 1909. The following is taken from the Littleton *News-Reporter* of January 22:

After an illness lasting through many months with tuberculosis, Dr. Roy Vaughan died at the home of his father in Durham last Sunday night. Dr. Vaughan was well known and greatly beloved by many of our readers. He was a young man of excellent habits and when the fatal disease marked him as its victim was practicing medicine with marked success and popularity. The future held out to him prospects of a successful career. Heroically he fought the disease, but abided its results with patience and resignation. He leaves a wife, who has been an untiring comfort and helpmate to him through all of his afflictions. She and their child have the heartfelt sympathy of a host of friends in the sad bereavement that has befallen them. His remains were brought to Vaughan and on Tuesday buried near the scenes that were ever dear to his heart.

Dr. J. C. Walton, age 59, for many years prominent in the practice of his profession in Reidsville, N. C.

Dr. John Chappell Walton was born in Caswell County, North Carolina, on August 19, 1855. He received in his boyhood days a common-school education. After deciding upon medicine as his life-work, he attended the Louisville Medical College, graduating there in 1878. For the practice of his profession he located in Reidsville, N. C., where he was quite successful. In 1902 he moved to Chase City, Virginia, to the Mecklenburg Hotel, to take charge of the practice at that famous resort. While at Chase City he became very much interested in hydrotherapy, making for himself a considerable reputation in this particular branch of medicine. In 1907 he moved to Richmond, Virginia, opening up quite an extensive office for the practice of his specialty. His practice soon grew, drawing patients not only from Richmond and vicinity, but from other cities and other States. During his several years of practice he at different times took post-graduate work at Johns Hopkins, Medico-Chirurgical College, Philadelphia, and the post-graduate and polyclinic hospitals in New York.

He was a member of the North Carolina State Board of Medical Examiners, 1900-1902. On leaving North Carolina he was made an honorary fellow of the State Medical Society. He was also a member of the American Medical Association, the Association of Railway Surgeons, and the Tri-State Medical Society. He was also neurologist for the Southern Railway system, which office he held up to the time of his retirement from practice.

Dr. Walton married Miss Bessie Hall of Ridgefield, New Jersey, in October, 1901.

In January, 1913, he had a cerebral embolus, which necessitated his retirement from practice, and on August 3d of the same year he had a cerebral hemorrhage, which caused paralysis of the entire right side, from which attack he was confined to his bed until his death on March 11, 1915.

Dr. Walton demonstrated that he was a true physician; and his genial manner, his magnetic influence, his honesty of purpose, together with an entire absence of display to make an impression, his great interest in his cases, the thoroughness of his diagnoses and treatment, with so many cures, made his clientele value his services and hold him in high personal esteem. Aside from his profession, he had a strong and noble character. He appreciated his friends, and showed his gratitude on every occasion. He demonstrated the beautiful harmony that should exist between the characteristics of the gentleman and the qualifications of the physician; and we know of no one to whom we could point with more pride for emulation.

"After life's fitful fever, he sleeps well."

—*J. T. J. Battle.*

M. H. Fletcher, M.D.,
A. W. Knox, M.D.,
M. L. Stevens, M.D.,
Committee on Obituaries.

ANNUAL ESSAY.

THE PRESENT STATUS OF TUBERCULOSIS KNOWLEDGE.

Mary E. Lapham, M.D., Highlands Camp Sanatorium,
Highlands, N. C.

The results of ten years of tuberculosis work should be the reduction of the number of cases, a lessened need for hospitals, beds, and nurses, and a general lightening of expenses. Have we obtained these results? Ask Chicago, with its expense roll for its new $2,500,000 hospital for tuberculosis patients alone. Ask New York, with its $3,000,000 hospital for only this class of patients and its annual expenditure of over $2,000,000 on this one disease. Is there a single place in the world where the number of tuberculosis cases has been reduced? Not one. On the contrary, the number is steadily increasing, especially among school children. We were so certain a few years ago that we could "obliterate" tuberculosis if we only had money and help enough. Is our failure due to lack of money and effort? Do we still think that this disease is comparable to smallpox or the plague, and that it can be put down as effectively as malaria? There are certain reasons for thinking that it cannot. Each year and each day will bring its inevitable dangers that cannot be prevented, because they are part of life. General principles will help in the reduction of these dangers, but cannot prevent them.

There are two possible sources of error in our present methods of trying to prevent more cases of tuberculosis: We are all waiting for a case to become manifest before we recognize it, and we believe the prevention of infection prevents the disease, and that our work should be governed by protection from exposure to infection. Delayed diagnoses are responsible for many deaths; in many instances delay and death are synonymous terms; this applies more to the death rate than to the number of cases, which would be the same, regardless of the percentage of recoveries: the reduction of the death rate has justly encouraged our efforts, but even the saving of 50 per cent and cutting the death rate in half should not blind us to the fact that the actual reduction of tuberculosis cases has never been accomplished in any place in the world. Even the reduction of the death rate is obtained at a fearful cost, because the cases are all manifest, that is, enough time has been given tuberculous processes to force their recognition upon us instead of our having forced recognition upon them long before their destructive work became apparent. This waiting for manifestations is a fundamental flaw in our methods which must be well appreciated to be corrected. The delay is due to lack of manifestations.

Before we can effectually protect our people against the development of tuberculous processes, we must work on the basis that they give no signs in the majority of cases. We know that 90 per cent of all adults are infected with tubercle bacilli from the very earliest age; that the presence of tubercle bacilli within our bodies sensitizes us to the production of immunity; that in some cases hypersensibility results in anaphylaxis and the mechanism of defense proves harmful; that the chief reservoirs of infection are the bronchial and mesenteric glands; that the beginning of pulmonary tuberculosis in the majority of cases is by extension from the bronchial glands. When the bronchial glands of a child become tuberculous, the constitutional effects of the toxins are loss of energy, weight, and appetite; the local effects are pressure upon the surrounding tissues, causing a slight, almost imperceptible, hacking cough, hardly more than a slight clearing of the throat, or a hard, brassy, metallic cough, or paroxysms like whooping-cough; asthma is a very common symptom, and there may be facial cyanosis and edema. For years this suspicious syndrome may cause careful examinations of the lungs with invariably negative findings and the assurance that there can be no fear of tuberculosis, because nothing can be found in the lungs. Why should there be any physical signs? From the bronchial gland the tuberculous processes run out along the bronchi towards the periphery and on up into the apex. These extensions are interstitial; they do not roughen the inside of the air passages, nor do they suppress the entrance of air; there is nothing to alter the breath sounds nor to cause dullness, and so there are no physical signs, while all the time these threads of infiltrations are weaving their way through the lungs until enough thickening is caused to create signs. Jordan says that 50 per cent of all cases of pulmonary tuberculosis are of this type, and cannot be detected by physical examinations until enough harm has been done for us to find it.

In another large class of cases the toxins do not affect the general health, and there is nothing to suggest an examination. Only too often a man goes until he drops, just because he has kept well. There is no reason whatever for seeing a doctor, and when he does, the whole of one lung may be gone. With our present methods of working, delayed diagnoses are inevitable.

The public health work of the whole world is based upon the prevention of infection. If we can prevent the entrance of tubercle bacilli into our bodies we shall never have tuberculosis. But is it possible to do this? Is it any use to try?

It is universally admitted that by the time our children reach maturity they are all infected with tubercle bacilli. What does this mean? Have they all been exposed to "open" cases? If so, is it in any way possible

to prevent this exposure and the infections? We have 20,000,000 school children in the United States: is it likely that they have all been exposed? And if they have, can we help it? Hillenberg, working in an extraordinarily healthy hill district, examined all the school children and found that from 25 to 70 per cent were infected with tubercle bacilli. Where did these infections come from? Not from "open" cases, because there had not been a case of tuberculosis in that district for over ten years.

Why do the lower animals have tuberculosis? In 120,000 consecutive autopsies of hogs reported by the Bureau of Animal Industry, 93.3 were infected with tubercle bacilli. Fifty per cent of cattle were infected. Poultry tubercle bacilli are causing such losses among hogs that definite efforts to suppress the tuberculosis of poultry are being made: cows, horses, dogs, cats, sheep, goats, rabbits, guinea pigs, pigeons, birds, turtles, frogs, snakes, fish, etc., all have tuberculosis even as we. How is the tuberculosis of the cold-blooded animals perpetuated? They do not have open cases. Where do their infections come from? Looking over the domain of tuberculosis throughout the animal world, we see how inadequate our ideas are as to its etiology. Animals do not live in crowded tenements; they are not overworked nor underfed; the struggle for existence does not concern them; they go to bed with amazing regularity; they do not drink nor indulge in excesses of any kind; living under ideal conditions, they develop tuberculous processes in the midst of perfect health, just as we do. With the animals, good living, good health, good morals, nothing suffices to prevent the development of tuberculous processes. Why? No one knows, any more than we know why they or we are infected; no one knows what the sources of these infections are; and no one knows what the tubercle bacillus is, or its place in the world of pathogenic organisms. Was it originally a harmless saprophyte that by a series of evolutionary adaptations to its hosts has traveled up from the common acid-fast bacilli of the fields through the cold-blooded, then the warm-blooded, then mammalian animals, and finally to man? Is the comprehension of the evolution of the tubercle bacillus requisite to its overcoming? Must we first know its place in the history of the world, its phylogenetic as well as its ontogenetic development? Since each individual repeats in its development the history of its race, can we infer the story of the tubercle bacillus from what we know of its life history? Can we get any idea of the path it has followed from fish to man?

We know that the development of the tubercle bacillus from its simplest sporoid form consists in the acquisition of fatty compounds. Starting as a slightly elongated sphere containing one or more granules rather thicker than its diameter, this sporoid form has no ability to retain stains in decolorizing solutions. It stains very easily with any

simple, basic dye, but loses its stain with equal ease. As the granule begins to synthesize fats, it begins to hold its stain, so that it is not decolorized by Gram, or rather by Much's modification of Gram. This is known as Much's granule, and it has acquired a mixture of lipoids and neutral fats enabling it to hold its color by Gram; at a later stage the cell body becomes Gram positive; then the granules stain with Ziehl and part of the cell body begins to be acid fast; these are the fragmented bacilli or "splitter bodies" of Spengler. Finally the cell body becomes impregnated with acid-fast substances and stains uniformly, showing no granules or trace of structure, but looking like a slender, solid rod, which is the adult, homogeneous tubercle bacillus discovered by Koch.

We know that through all these series of developments the acid-fast substances never become an integral part of the granules: they are simply a product, not a part of vital activities, and these products can be stripped off, layer by layer, just as they were put on, without destroying the virulency or reproductive power of the bacillus. When a culture of tubercle bacilli is injected into the peritoneal cavity of a mouse, the lysins first dissolve off the waxy mantle clothing the cell body; the cell substance or matrix is not a wax, but a fatty compound, less acid fast, so that it only stains a dull pink, but the granules are unaffected and still stain a brilliant red; as the fatty acids are lost, the matrix loses all its acid-fast properties and no longer stains with Ziehl, but the unaffected granules still retain their waxy mantle and stain brilliantly as a chain separated by colorless spaces; these are Spengler's granules. This is as far as Ziehl's stain can carry us. After the lysins dissolve away the covering of the granules they can no longer hold their stain with Ziehl, but do with modifications of Gram, because neutral fat and lipoids suffice. After these are lost, nothing remains but the very kernel of the bacillus, the resting, sporoid form of Spengler, v. Betegh, Kronberger, etc., which cannot hold its stain, and has no acid-fast substances. All through these changes, as one layer after another is stripped off, the sporoid kernel retains its virulency and can cause tuberculosis or develop up to the acid-fast adult bacillus of Koch under favorable conditions. The most salient characteristic feature of the life history of the tubercle bacillus is its power to synthesize fats and to become a member of the acid-fast family so universally distributed throughout nature.

Is the tubercle bacillus of Koch the only acid-fast bacillus capable of causing tuberculosis? No, indeed! Wherever tuberculosis is found, no matter in what animal, there acid-fast bacilli are found. Are they all related? Do they all come from the same family? Much says so, and there is much evidence to prove it. An extract, or tuberculin made from any acid-fast bacilli, will cause a specific tuberculin reaction in

any animal suffering from tuberculosis. Is our tuberculosis but a part of this general phenomenon and our acid-fast bacilli but one of many? Are the distinctions between the tubercle bacilli of one species of animals different from those of others only because the hosts are different? Are these distinctions entirely due to adaptations?

Ferran was the first to show that there are saprophytic strains of the usually parasitic tubercle bacilli. In 1888 V. C. Vaughn brought over from Koch's laboratory a saprophytic culture which has been grown ever since. Virulency is lost, but the life history is the same from spore formation up. Ferran has developed virulency by injecting cultures of a saprophytic, nonvirulent strain into rabbits until abscesses formed and then inoculating guinea pigs with the pus, causing typical miliary tuberculosis and recovering the adult acid-fast bacilli of Koch from the lesions.

Thiele and Embleton took the common acid-fast bacilli growing on timothy, the common grass bacillus, and caused typical tuberculosis in rabbits; Lubarsch inoculated his arm, and a typical autopsy tubercle was produced by the same bacillus. Maher reports abscess formation in an injured scrotum with pus containing a pure culture of smegma bacilli, that is, acid-fast bacilli distinguished from tubercle bacilli by their inferior ability to resist acids; after a short time tuberculosis of both lungs developed. Were these smegma bacilli related to the tuberculosis of the lungs? Could they have acquired more acid-fast properties and thus stood the acid test? Möller reports a case of typical tuberculosis of the lungs caused by tubercle bacilli that could not stand the Ellerman antiformin method; they lost their waxy mantle when subjected to antiformin and did not stain by Ziehl. Was this because of incomplete development?

Acid-fast bacilli are always associated with tuberculosis; tuberculous lesions are caused by acid-fast bacilli; these acid-fast bacilli are present in all food and drink of all animals; they are constantly found in the fluids and tissues of animals, regardless of tuberculous changes; they are excreted by animals in the urine, feces, milk, sputum, regardless of the presence of tuberculosis. Is the universal infection of our children by acid-fast bacilli just a part of these universal truths and the development of tuberculous processes due to the assumption of pathogenic properties? We do not know; but if the residence of tubercle bacilli within our bodies should prove to be analogous with the residence of the equally universal B. coli, we could not prevent tuberculosis by preventing infection, because this would be impossible. This being true, we should know that the best way to prevent tuberculosis would be to find out the beginnings of tuberculous processes at the earliest possible

moment. We can never prevent these beginnings, and they will always be a menace, and since all are threatened, all are in danger. Every one of our children is a possible candidate for tuberculosis, and the only way to protect them is by periodical examinations, regardless of apparent good health, because the lack of manifestations does not warn us, and there is no telling the day or the hour that the danger begins.

Summing up our tuberculosis knowledge, we find that it has hardly begun. That the evolution of the tubercle bacillus needs to be studied; that the work done only shows that this or that species of acid-fast bacilli is not pathogenic for this or that animal; the path we need to follow is the effects of adaptation to the host that have conferred upon the different tubercle bacilli their distinguishing characteristics; not whether cultural characteristics are the same, because they are necessarily different; the training is different. Given the different paths, let us take those leading up to man, to show divergence of effects, and those leading back to show the common origin.

We need a scientific study of acid-fast bacilli. What are they doing in butter, milk, cheese, blood, feces, and urine? Where do smegma bacilli stand in the scheme of evolutionary development?

Remembering that life begins under watery conditions, and that marsh gas is the basis of all fatty compounds, let us go out into the marshes and find the origin of this family which learned to synthesize fats and thus distinguished itself from all others.

Since the Rockefeller Institute is supported by the income derived from fatty compounds, it would be poetically fitting if some of this income were spent upon the study of how one class of bacteria acquired the ability to synthesize them and consequently became the acid-fast foes of the animal world. Out in the marshes where marsh gas still is generated, the building up of its compounds into fats and its synthesis into organic life might be studied so as to blaze the way leading to comprehension and the enlightenment of the world, proceeding from the Rockefeller Foundation, supported by fatty compounds.

ANNUAL ORATION.

THE INTERNATIONALIZED PROFESSION.

Dr. James M. Northington, Boardman.

When it first became known to me that mine was to be the privilege to address you in this capacity, I resolved to say nothing laudatory of the profession. I recalled many things which have been said in our praise, ranging all the way from our distinguished member Oliver Wendell Holmes's claim that ours is "a profession which for more than two thousand years has devoted itself to the pursuit of the best earthly interests of mankind," through the cynic Diogenes' reluctant admission, "When I consider pilots, physicians, and philosophers, I am minded to think man the wisest of animals," to Elspeth Macfadyen's measured praise, "If we're tae dee, we're tae dee; and if we're tae live, we're tae live; but a'll say this for the doctor, that whether yir tae live or dee, he can aye keep up a sharp meisture on the skin."

But when a great conservative metropolitan newspaper, a real molder and reflector of opinion, credits us with being the one internationalized profession; our brethren in the armies of Europe with making no distinction between friend and foe; and seconds the opinion of Dr. Meltzer of the Rockefeller Institute, that we, representing humanity as a whole, can "uphold and accelerate the progress of international morality," I feel this is a suitable subject to bring before this body. Continuing, this paper states editorially: "Everybody knows that the wonderful ingenuities of men skilled in mechanics, physics, and chemistry, and other theoretical and practical sciences have contributed to making the war in Europe the most appalling in history; . . . that only in the group of studies comprising pathology, bacteriology, hygiene, surgery, pharmacology, medicine, the preparations of antiseptics, the many important discoveries resulting therefrom have never been used by one nation against another for the taking of life. This is the great exception to modern practice as between nations. Intranational morals are highly developed; international morality is beastly, and the intellectual growth and activity that contribute so largely to make men decent and gracious within the State develop monstrous atrocities in their devotion to warring tribal gods."

Then the appeal is made to the members of the medical profession in this great neutral country to form a brotherhood devoted to the prevention of war by the promotion of the same degree of morality between nations as the better element of all callings favor between individuals.

Such a compliment from such a source was too great to be resisted. Pondering it, I came to the conclusion that many things said of the medical brotherhood, which I had been accustomed to regard as fulsome praise, were really well deserved tributes. Let us not think that this is to the medical man. "Lay not that flattering unction to your souls." It is to the great profession as a whole, which has unfolded to us its mysteries, and taught, in unmistakable terms, that every man is our brother.

Medicine is an art built upon many sciences. Its foundation is laid in those which deal with the structure and the functions of the different organs of the human body. In the pursuit of these studies we are continuously confronted by proofs of the practical identity, in all essential parts, of all races of men.

We see in each the same nerves, muscles, the same four-chambered heart, the same organs of respiration and digestion, the same many convoluted brain; and the idea is constantly impressed on us that the functioning of that brain—its desire for power, for learning, for goodness—is much the same, whether its tenement be the skull of Jew or Gentile, Catholic or Protestant, Russian or German, devout churchman or self-confessed atheist. So our sympathies expand, we loose our mental bonds, and acquire the habit of thinking in broader terms. And when we consider that the great names in medicine include citizens of Arabia, Egypt, Greece, Rome, and every considerable country in the modern world; when we see daily the results of their self-sacrificing labors, and read the records of their lives, we must indeed "see through a glass darkly" if we fail to recognize that their devotion was for the service of mankind, regardless of race, religion, or nationality.

Again, the practitioner of medicine sees all manner of men; sees them when the disguise worn in the street is off, when their souls are laid bare by anxious solicitude or agonized bereavement; and here, too, every man appears much as every other man. There is little excuse, then, for us to be narrow Chauvinists, and wish to cut the throats of those who believe a little more or a little less than we; and our record compares favorably with that of the most direct representatives of the Prince of Peace. True it is that a doctor is at this time at the head of our standing army; but we have accounts of "fighting parsons," and at least one lieutenant general of the last century was a bishop of the Episcopal Church. Practitioners of medicine have gained little distinction in wars by making wounds for their fellow practitioners to treat. Instead, they have been found binding up wounds, alleviating suffering, strengthening the faint, comforting the dying.

Some may say this is a political question, and that such is not the province of a doctor. It is above all else a humanitarian question. "I

am a man, and whatever is humanity is akin to me," and so concerns me. The Declaration of Independence was the culmination of a humanitarian movement which involved politics. Of the fifty-six signers who shared with John Hancock the liability to "hanging separately, if they did not hang together," six were doctors of medicine. John Locke, whose essay on "The Human Understanding" is numbered among the greatest works of philosophy, whose statesmanship was of no mean order, and who wrote "Two Treatises on Government," was a member of the guild.

The medical profession has a more than ordinary interest in man. Some months ago I read a most touching article which purported to explain that women in authority would put forth far better effort to prevent war than would man. And why? This figure was used: If a city were being besieged and a breach had been made in the wall, the ordinary soldier would have little compunction in using sculptured marble to close the breach; but if that soldier were a sculptor, he would use this work of art only as a last resort, and then reluctantly; for he reads in the lines of the figure the record of months, may be years, of loving yet laborious toil. He knows what the figure cost. So with woman and her son, man.

Is there one among us so callous as not to be moved at the look of tenderness, pride, and "love which passeth all understanding" which lights a mother's face when she clasps her infant to her bosom in its first caress? It's a very little thing, perhaps far below the average of infants, responds to her embraces no whit more than does the new-born of lower animals to the touch of the mother's tongue; yet, to her, it's the greatest thing in the world; for has she not endured self-sacrifice and suffering? And is not all her reward?

Her sacrifices and sufferings are only begun. She must tend and mend, listen for croupy coughs, water thirsty lips, patiently hear childish stories of disappointments, help with school lessons, plan and stint that her child may be well prepared for life's duties. Then, is it hard to understand that mothers will go to almost any extremity to avoid sending forth the male children, who have cost them so much, who are the pride and comfort of their vigor, and are to be the props of their age, as sacrifices to the insatiable god of War?

And next after mothers, who can understand the cost of a man with an understanding having half the depth of a doctor's! We, too, would preserve men, for he is the fruit of our labors. How discouraging it is to note the volume of work done to improve the hygienic surroundings, the food, and even the heredity of babies, one by one, when the chances are good that the best of them are to be sent forth to be mown down by hundreds and thousands, by shrapnel, or noxious gases, or made food for fishes by the stealthy attack of a submarine!

We call the tribes heathen who sacrifice a few babies to the sacred crocodile or to Juggernaut. Have we this right, so long as War reaps his richest harvest from the fairest fields of Christendom? They, at least, are endeavoring to propitiate their gods, whereas, in our case, only the gods of Avarice and Selfish Ambition are invoked. "Hunger and thirst may be satisfied. The dragon war possesses neither; it is never satisfied. It inhales whole cities at a breath; it quaffs the tears of a nation at a draught; it devours armies at a gulp. In times of peace the monster stretches out its huge limbs and yawns; and the nations prepare fresh sacrifices."

Let me say here that I would not advocate peace at any price; that in this present time of our country's stress I find myself in hearty accord with the policies of our great Chief Magistrate, who sadly and seriously, but none the less firmly, insists on the paying, on the part of all nations, of the due mead of respect to our National dignity.

The conspicuous place given in history to military matters and men, the crash of martial music, the brilliant uniforms, the glittering accouterments, the magnificent monuments to military leaders, tend to imbue the minds of youth with a yearning for military achievements. Of course, we hear "Peace hath her victories no less renowned than War's"; but to the majority those words have a hollow sound. Will they not listen to the voice of one who, having tasted all the fruits of military glory, found them to turn to ashes on his lips, the chivalrous Wolfe, on the eve of his last victory at Quebec, "I had rather have written 'Grey's Elegy in a Country Churchyard' than have the glory of beating the French tomorrow"? And quoting from this poem:

> "The boast of heraldry, the pomp of power,
> And all that beauty, all that wealth e'er gave,
> Await alike the inevitable hour;
> The paths of glory lead but to the grave."

We have heard it urged that in case of intervention by these United States in the unhappy and distracted republic to the South, it would be only a case of a strong man chastising a small boy. This is a very inaccurate comparison. I trust it is not to become necessary; but should it, we will not go with any such specious reasoning in our minds. The scratches inflicted by a small boy soon heal, not even leaving marks. Those of us who died in the conflict with a smaller nation would be just as surely dead were there a hundred or a hundred thousand of us.

We hear much of a nation fighting for a place in the sun. What does this mean? Nothing more nor less than one group of men wishes the opportunity to exploit some other group. A ruling class, which has never

produced anything, whose exactions have caused those of the producing classes of their own country to groan ominously under the burdens, seeks to bring other producers under its sway, that tithes may be collected and the treasury filled. Another class, the commercial, is the partner of the ruling, desiring special privileges in dependent provinces. In the words of Karl Marx, "For exploitation, veiled by religious and political illusions, it has substituted naked, shameless, direct, brutal exploitation. It has drowned the most heavenly ecstasies of religious fervor, of chivalrous enthusiasm, of Philistine sentimentalism, in the icy waters of egotistical calculation. It has converted the physician, the lawyer, the priest, the poet, the men of science, into its paid wage laborers."

And in this wretched state of affairs, when the music of the spheres is being drowned in the roar of the cannon, the rattle of the machine gun, the explosion of the torpedo, the shrieks of the dying, and the wails of hungry children, we are turned to as the one class whose interests are the interests of all mankind; and it is suggested that we invite our brethren in all other neutral countries to unite with us at this time, and those in the now warring countries at the close of the war, to promote international morality and prevent, through all the future, arbitraments by the sword. Surely no greater compliment has ever been paid any body of men.

And how are we to answer? We have the humanitarian instincts, the cosmopolitan sympathies, and unparalleled opportunities for individual and combined educational work. If any result is to be attained, it must be by a literal leading out of the young from the ideas of narrow patriotism into the great truths of universal brotherhood. Tolerance must be inculcated, along with a desire to understand the viewpoints of others. We often lose sight of the real significance of the word "misunderstanding." Most quarrels begin through lack of understanding; hence, we have the scriptural admonition, "Acquaint thyself with him and be at peace." Further, even if we cannot understand those who differ radically from us, let us be slow to impugn their motives; for, as Oliver Wendell Holmes wisely concluded, after a careful study of "The Weapon Ointment Theory," "Perkins' Tractors," "Bishop Berkley's Tar-water Cure," homeopathy, and other delusions, "Neither immaculate honesty, vast general acquirements, nor even great mental acuteness is any specific against human folly." This leads us up to Charity, which is "the bond of peace and the perfection of every virtue."

Let us begin with ourselves; pluck the beams from our own eyes, that we may see the more clearly how best to rise to this glorious opportunity. Let us do away with carping criticism of each other. The tendency is very old. We have an illustration of it in the writings of St. Luke him-

self. Mark gives an account of a woman who "had suffered many things of many physicians, and spent all she had," leaving us to decide as we choose as to the manner of spending; but "the beloved physician" would have it, "which had spent all her living upon physicians, neither could be healed by any." This may be only an illustration of the desire of our brother to be accurate; but it bears many marks of similarity to present-day detractions of one doctor by another.

Then, let us bring all the individual and combined influence possible to bear on the methods of instruction in our schools. Long ago it was written, "But War's a game which, were their subjects wise, kings would not play at." It was estimated some twenty years ago that six billions of men had fallen in war. The mind fails to grasp such figures. And, doubtless, the indirect consequences in destruction and demoralization were even more disastrous. We are not called a military country; but at this time two-thirds of the revenues of our National Government are expended in paying for past wars and making preparations for war in the future. The cost of a single discharge of one of our largest guns is more than three times the average yearly salary of a teacher in our public schools. Think of the possibilities if these vast sums were expended in promoting the public health and education! Let us move slowly, but make no mistake about our goal, and remember that "The object of a journey is not only to arrive at the destination, but to have pleasure by the way."

Fortify the weak minds of men against the allurements of applause, and your coasts will need no fortifications; direct their gaze to unmarked graves instead of the bronze figure and charger; call their attention to those halt, maimed, blinded, widowed, and orphaned by war's ravages; show them the reason for their burdensome taxation; and the subject will lose much of its glamor. Few there are who speak so plainly as Thomas Hobbs, who, though not greatly opposed to war, states bluntly: "Force and fraud are, in war, the two cardinal virtues." Some day, let us hope, we are all to arrive at the state of the Utopians, who "counted nothing so much against glory as glory gotten in war," and so have peace, which is "the sovereign good."

If we can accept this high commission, and carry it to so triumphant an issue as to be instrumental in bringing soon to pass the prophecy, "They shall beat their swords into ploughshares and their spears into pruning hooks; nation shall not lift up sword against nation, neither shall they learn war any more; but they shall sit every man under his vine and under his fig tree, and none shall make them afraid," then we can repeat with a new emphasis: "There can be no loftier, more practical manifestation of love to man than is exemplified in the benignant

effort to assuage the ills to which mortality is heir; nor can any devotion be more privileged and inspiring than that which softens the shock of disease, illumines the darkness of physical and mental distress, and from the débris of misfortune, vice, and heredity creates anew the image of divine perfection." And the profession of medicine will hold a sway powerful and beneficent beyond our poor imaginings, when you and I, "like streaks of early morning cloud, shall have melted into the infinite azure of the past."

PROCEEDINGS

OF THE

HOUSE OF DELEGATES.

TUESDAY, JUNE 15.

The House of Delegates was called to order by the president, Dr. L. B. McBrayer.

The following county societies responded to the roll call:

Society.	*Delegate.*
Alamance	Dr. T. S. Faucette.
Beaufort	Dr. D. T. Tayloe.
Buncombe	Dr. D. E. Sevier.
	Dr. T. Frazer.
	Dr. Carl Reynolds.
Caldwell	Dr. A. A. Kent.
Camden-Pasquotank-Dare	Dr. Oscar McMullan.
Carteret	Dr. K. P. B. Bonner.
Chatham	Dr. B. H. Hackney.
Craven	Dr. G. A. Caton.
Cumberland	Dr. J. W. McNeill.
Currituck	Dr. Stuart Mann.
Davidson	Dr. D. J. Hill.
Durham	Dr. B. W. Fossett.
Edgecombe	Dr. W. W. Greene.
Forsyth	Dr. A. T. de Valk.
Gaston	Dr. L. N. Glenn.
Granville	Dr. G. T. Sikes.
Greene	Dr. J. L. Carroll.
Guilford	Dr. W. M. Jones.
	Dr. J. W. Long.
	Dr. J. A. Williams.
Harnett	Dr. W. P. Holt.
Haywood	Dr. J. R. McCracken.
Henderson-Polk	Dr. W. R. Kirk.
Johnston	Dr. L. D. Wharton.
Lee	Dr. J. P. Munroe.
Lenoir	Dr. J. M. Parrott.
Mecklenburg	Dr. R. H. Lafferty.
Nash	Dr. T. J. Dean.
New Hanover	Dr. Ernest Bulluck.
Northampton	Dr. M. Bolton.
Onslow	Dr. Cyrus Thompson.
Person	Dr. R. S. Baynes.

Society.	*Delegate.*
Pitt	Dr. C. O'H. Laughinghouse.
Randolph	Dr. W. I. Sumner.
Robeson	Dr. R. D. McMillan.
Sampson	Dr. G. M. Cooper.
Surry	Dr. E. M. Hollingsworth.
Union	Dr. H. D. Stewart.
Vance	Dr. F. R. Harris.
Warren	Dr. G. H. Macon.
Washington	Dr. J. L. Spruill.
Wayne	Dr. J. R. Parker.
Wilkes	Dr. J. M. Turner.
Wilson	Dr. E. T. Dickinson.

The following delegates were elected as members of the Nominating Committee:

First District	Dr. Spruill.
Second District	Dr. Laughinghouse.
Third District	Dr. Thompson.
Fourth District	Dr. Dickinson.
Fifth District	Dr. Hackney.
Sixth District	Dr. Harris.
Seventh District	Dr. Stewart.
Eighth District	Dr. Long.
Ninth District	Dr. Hill.
Tenth District	Dr. Sevier.

Upon the suggestion of the secretary, the reading of the minutes was dispensed with, as they were published in the Transactions for 1914.

The president read the following message to the House of Delegates:

PRESIDENT'S MESSAGE TO HOUSE OF DELEGATES.

The matter of visitors appearing on the program of our annual meeting is one upon which this House of Delegates should take action. During the last year your president felt that two or three leading men from outside the State who would be guests of the society and deliver lectures or read papers on important subjects now demanding the attention of our profession would be wise and proper. But as the days went by the president found that some men who were not members of this society were very desirous of appearing before the society, and, in fact, through their friends, more or less insistent. In addition to this, the chairmen of some of the sections, not being familiar with usages in this particular, took the liberty of inviting outside men to appear under their sections, without the knowledge or consent of the president, so that we have on this pro-

gram the (to me) unpleasant condition of a large number of men from outside the State. This is a State Medical Society. It is for the doctors of North Carolina, and I can conceive of no better improvement from every standpoint for a physician in North Carolina than to read a paper before his own State Medical Society, and I don't think that the time should be taken up by outsiders whose papers may or may not be of much value to our society. I, therefore, recommend that this House of Delegates pass a resolution requiring that all invitations to physicians not members of this society to appear upon the program in any meeting must be extended through the president.

The recommendation in the president's message was stated as a motion, seconded, and carried.

The following report was submitted by the secretary, Dr. John A. Ferrell:

REPORT OF THE SECRETARY.

Mr. President and Members of the House of Delegates:

1. Your secretary desires to report that the work under way at the last meeting of this body—the collecting of a complete file of the Transactions of the society—is complete. By receiving a set of the Transactions from Dr. Walter C. Murphy, former secretary of the society, now of Washington City, covering the period from the organization of the society through the year 1900, with the exception of three copies which were supplied by Dr. Cobb of Goldsboro and Dr. Cheatham of Durham, and with the volumes already in the possession of the society, the collection has been completed. The volumes have been bound in leather and are to be placed in the State Library, where the collection can be added to each year, can be under the constant supervision of a librarian, and open for reference at all times to those interested. The donation of Dr. Murphy has made the completion of this task possible, and the society should, I think, adopt a resolution thanking him for the gift.

It is a pleasure to report that Dr. I. H. Manning has practically completed a set of the Transactions for the University, and that Dr. Archibald Cheatham is trying to complete a set for Trinity College. A few members have complete, or practically complete, sets. It is hoped that, at some appropriate time, these gentlemen will donate their collections to the permanent libraries of the State, where there is a guarantee that they will be preserved and where the society can add a volume to each set each year through the future.

2. The second important task, that of completing a membership record of every member of the society since its organization, has also been com-

pleted, so far as records have been kept or published. The information is recorded in two large ledgers, one for the treasurer and one for the secretary. The information gives the name, county, post-office, college of graduation, year of graduation, year of license, the dates when dues were remitted, and the amounts by years. Many months have been consumed in bringing this data into shape, and in this labor I have had the help of a skilled statistician. The plan being followed in this work was outlined in my last annual report.

3. Dues have been received this year from 78 component societies. These societies, with the honorary fellows, numbering 68, and nine honorary members, give a total membership for the year, to date, of 1,221 members.

4. The secretary did not purchase the metal cabinet for which he was given authority last year, because, after further consideration, it appeared that if the collection of Transactions could be completed, it would be best to place the volumes in the State Library, where they would be constantly under the supervision of a librarian, and where they will be more accessible for use by those interested than would ordinarily be the case if kept at the residence of future secretaries of the society. A small trunk was bought as a shipping case for the property of the society other than the Transactions. Probably a much smaller fireproof cabinet than was originally contemplated would be a good investment for the society, and your secretary would recommend that the incoming secretary be given authority to make such a purchase.

5. The state of the finances of the society is dependent on, *first,* the number of paid members kept in the society, and, *second,* upon the business methods employed in the use of its funds. You will recall that, for a time, the revenues for one year were largely used in paying the society's accounts for the preceding year. The calendar year 1913 closed with all outstanding bills paid and a balance in the treasury of $86.36. The year 1914 closed with a balance of $450.14 in the treasury, and the prospects are that we are going to continue on a sound financial basis.

6. In an effort to maintain the membership, the president and secretary of the society have written a number of letters to the district councilors and county secretaries. In March, approximately 2,000 postal cards were sent to all the physicians in the State whose addresses were obtainable, reminding them that the membership fees were due and should be paid promptly. About May 20th, nearly 2,000 tentative programs were sent to all members of the profession in the State whose addresses the society has, and last week about 1,400 of the final programs were mailed to all the physicians who were in good standing last year

and the additional ones who have since joined the society. With the coöperation of the treasurer, a final postal card was sent out about June 1st to all those physicians who have been in good standing in recent years, but who have neglected paying their dues for the current year. It should not be necessary for the society to go to the expense of suggesting to the physicians that they accept the privilege of membership in the society. It means, of course, that the society is lacking something of fundamental importance, and effort should be made to ferret out and supply this need.

7. A proposition relative to soliciting membership was received from the secretary of the American Medical Association, but your president and secretary did not care to assume the responsibility of adopting it. In fact, they felt that the efforts being employed would bring in the majority of the physicians who are desirable as members of the society. With your permission, I shall read the communication, and the House of Delegates can act as it deems best. This communication is appended to my report.

8. At the request of the American Medical Association, the president appointed as a Committee on the Conservation of Vision, to coöperate with a like committee from the American Medical Association, Dr. C. W. Banner of Greensboro, who is also on the American Medical Association committee, and Dr. Louise Merrimon Perry of Asheville.

9. A request was received from the secretary of the Council on Medical Education of the American Medical Association, suggesting that a committee proposed by this council to grade the hospitals in North Carolina, with a view to determining their merits in giving training to internes, was considered by the president and secretary of such great importance that it would be well to defer action until the House of Delegates was in session. The correspondence in reference to the matter is available for the consideration of the House of Delegates.

10. The last session of the society elected as alternate delegates to the American Medical Association Dr. Brenizer of Charlotte and Dr. D. T. Tayloe of Washington. Dr. Alexander R. Craig, secretary of that association, advises that these gentlemen are not eligible, and suggests that others be named. I respectfully call the matter to your attention.

11. The president of the society suggests the advisability of having a committee appointed to review the records relative to amendments or changes in the Constitution and By-Laws since the Hot Springs meeting in 1903, and to submit a copy, as it should now read, to the House of Delegates at the next annual meeting, and for publication in the Transactions.

12. There is some difficulty in ascertaining conveniently what are the present and past medical laws in the State. Your secretary recommends that the society request the Board of Medical Examiners of the State to prepare and publish a compilation of these laws, together with a list of physicians, and salient information concerning each one who has been licensed under the laws in the State. A copy of this publication should be placed in the hands of every member of the society.

13. The secretary values as highly as does any member of the society the excellent character and work of the North Carolina Public Health Officers' Association, which holds its meetings on Monday prior to the meeting of this society. He feels it his duty, however, to call to the attention of the society the fact that the programs of this organization are announced in the programs of the society; that its proceedings are reported by the society reporters, and published and distributed at the society's expense. The proceedings of the association represent approximately one-fifth of the published Transactions of the society, the total cost for which approximates, in round numbers, $1,500. The Public Health Officers' Association had, I understand, an assessment of $1 per member the year it was organized, but has not had to levy any since. I, as secretary, feeling a certain accountability for the business interest of the society, report this, without recommendation, for the information of the House of Delegates.

13. Having completed my term of service as secretary of the society, I am glad to retire in favor of some one else. In so doing, I wish to express my lasting appreciation to the society and its individual members for the kindness and consideration that has been shown me in every phase of the organization with which I have had any connection.

Respectfully submitted, JOHN A. FERRELL, M.D.,
Secretary.

Dr. Cyrus Thompson incorporated in the form of a motion a suggestion of the president that a committee be appointed to whom the report of the secretary should be referred, and that the committee make recommendations to the House of Delegates at a subsequent session. This motion was carried, and a committee of three members, Dr. Cyrus Thompson, Dr. J. M. Parrott, and Dr. J. W. Long, was named by the president.

A letter from the American Medical Association was submitted to the House of Delegates by the secretary, regarding a coöperative plan for securing new members, whereby the State Society would pay an appointee of the American Medical Association $1 for each new member secured for the society. On motion, it was voted not to adopt the plan.

Drs. J. P. Munroe and A. J. Crowell were elected alternate delegates to the American Medical Association.

The report of the chairman of the Board of Councilors was read by Dr. Saliba.

REPORT OF THE BOARD OF COUNCILORS.

Dr. M. M. Saliba, chairman, Wilson: In order that I might be better able to present to you a complete report of the existing status of organized medicine in the State, I sent a circular-letter to the secretaries of every county medical society reported in our last Transactions and to a physician in each of the counties that did not report. The following are the questions embodied in the letter:

How many physicians in the county?

Has the county a properly organized medical society?

How many of the physicians are members? How many are not?

How often does the county society meet? Has it a regular time of meeting? Has it a regular place of meeting?

Has the county society a prearranged program for each meeting? Is the program scientific, clinical, or social?

How many meetings did the county society have during the year 1914? What has been the average number in attendance?

Is interest in the county society growing, waning, or at standstill? Give the cause.

Is interest in the State Society growing, waning, or at standstill? Give the cause.

What suggestions do you as secretary, or your society as a body, make for furthering the interest of the profession in the county and State?

Forty county medical societies, including 43 counties, answered my letter, with the following results:

Active societies, 17; nonactive, 23. I mean by active societies those which have met six or more times during the year. Four societies met once, 2 twice, 3 three times, 3 four times, 4 five times, 3 six times, 1 seven times, 4 eight times, 1 ten times, 4 twelve times, 1 thirteen times, 1 fourteen times, 1 fifteen times, and 1 twenty-four times; while 7 did not meet. Of the 17 active societies, 8 met regularly at their stated time and 1 met oftener.

Thirty-six societies have a regular time of meeting, 4 have not. Three societies meet semimonthly, 16 monthly, 3 bimonthly, 8 quarterly, 1 semiannually, and 5 annually.

Twenty-five societies have a regular place of meeting, 15 have not.

There are 1,026 physicians in those counties; 822 are members and 204 are not. The average attendance at the meetings in the year 1914 is 350, that is, 42.84 per cent, which is a fair attendance. Among the active societies, Pasquotank-Camden-Dare County Society and Wilson County Society had the highest average attendance, that of 61 and 60 per cent, respectively.

Thirty county societies have a regular program for their meetings, 3 scientific, 1 clinical, 1 social, 7 scientific and clinical, 5 scientific and social, 13 scientific, clinical, and social; while 10 have no program.

Interest in the county society is growing in 15 counties, waning in 10, and at a standstill in 15.

Interest in the State Society is growing in 7 counties, waning in 14, and at a standstill in 19.

Twelve county societies have a membership of 90 per cent or more of all registered physicians in the county. Davidson, Jackson, and Wilson County Medical Societies have a membership of 100 per cent.

It is surprising to learn of the existing apathy and indifference of the men towards medical societies, and especially that of the State. One fact has been strongly impressed upon me, namely, that although interest in the county societies seems to take on a new life, interest in the State Society is waning. There seems to be a feeling among a large number of physicians that there is "too much politics" in the State Society, and the cry from all directions is, "Cut out politics." This is an erroneous impression that has, in my opinion, started from the fact that, at times, in conferring the honors of the State Society, the men who have given their time and energy to promote the interest of organized medicine have been ignored. There is no politics in this society, but there are leaders among us who have, deep at heart, the interest of the State Society as well as that of the organized profession at large. Leaders are essential to every organization, medical or otherwise. Leadership we welcome, politics we condemn.

After a careful study of the replies I have received, and the existing painful condition of the medical societies in the State, I have come to this conclusion, that it is not the fault of the men as much as it is the fault of the system we are working by, that such a condition does exist. I do not mean that the system is altogether wrong, but it is deficient, not complete. I have found that the men are ready and willing to join a medical society that offers them the slightest advantage. As it is, there is no distinction between the physician who is a member and the one who is not. There are no more advantages for the one who works for the uplift of the profession than the one who does not. Our county societies

have forgotten the fraternal and social aspects of their work, while the State Society has nothing to offer to its members save the annual Transactions, which are shelved as soon as received.

In the counties that have held regular meetings at intervals of a month or oftener, and at which meetings the fraternal and social aspects prevailed, the interest and enthusiasm ruled supreme. The importance of county medical society organization in its relation to organized medicine at large is not, in my opinion, sufficiently recognized by the profession in general, and should receive our most serious consideration. The perpetuity of our State Society, as well as that of the American Medical Association, depends upon the healthy activity of the county medical societies.

I believe that a systematic effort should be made by the State Society to help the councilors and the officers of the different county societies in upbuilding the county society. This can be accomplished in many ways, one of which is that the president and other officers of the State Society may issue, at stated intervals, circular-letters to be mailed to every physician in the State, showing them the advantages of organized medicine, and urging them to become active members of their county society. But to do so to any advantage we must, as a State Society, have some inducements to offer those who may become members, and to establish a distinction between the physician who is a member and the one who is not. Therefore, I beg to offer the following recommendations:

1. That the State Society put into operation the Medical Defense Law recommended by our secretary, Dr. J. A. Ferrell.

2. That this society should publish a monthly medical journal, and that a committee be now named to formulate plans for such publication.

3. That action be taken looking toward the adoption of provisions for Medical Relief Fund in case a member should become needy, or if the family of a member, in case of his death, should become in need.

Dr. E. T. Dickinson moved that the report be received and filed.

Dr. Cyrus Thompson: It seems, sir, that the recommendations made by the Board of Councilors should be acted upon, and in amendment of Dr. Dickinson's motion I would like to offer one that the report should be referred to the committee to which the secretary's report was referred, for their consideration.

Motion carried as amended.

A motion was offered by Dr. K. P. B. Bonner that if any member of a county society be present, and no delegate or alternate from his society present, he be seated as a delegate.

This motion was carried.

Dr. L. B. Morse: At the general meeting this morning, at which many, perhaps, were present, we had an example of what I believe is a great stumbling block to the success of our society. The first paper read consumed almost fifty minutes. It was a very excellent paper, a highly technical paper, but I am of the opinion that the benefit the members of the society are getting from the meeting would be greater if we would get through our program with more dispatch. I was asked to see if I could get up some resolution to obviate having long papers. I have drafted some resolutions, and would like to present them to the House of Delegates.

Whereas it is believed that it is the sincere desire on the part of every member of the Medical Society of the State of North Carolina to enhance to the utmost the pleasure and profit to be obtained from the annual sessions; and whereas it is universally believed that this can best be brought about by greater dispatch in the reading and discussion of papers, and the strict adherence to time limits: it is, therefore,

Resolved, That the time limit on all papers shall not exceed twenty minutes, and that the chairman shall signal all essayists two minutes before the expiration of the allotted time.

Resolved, That all discussions be limited to five minutes.

Resolved, That no extension be allowed essayists, except to visiting guests.

Resolved, That no person shall be allowed to discuss any one paper more than once.

Resolved, That it is the sense of the society that all meetings be called to order promptly on the appointed hour, regardless of the number present.

Resolved, That when an essayist is not present when his name is called, his paper shall be placed at the bottom of the section, and if he be then not present, it shall take its regular place at the termination of the program.

Resolved finally, That the president is earnestly requested to carry out these resolutions to the letter, and not to recognize any motion from the floor to change them.

Dr. A. A. Kent, Lenoir: I heartily approve of everything except the very last sentence. There are numerous things that might come up that would provoke occasion for change, and make it almost absolutely necessary to run over that part of those resolutions, and I do not believe that we should adopt that part. Otherwise, I heartily approve of them.

Dr. H. D. Stewart seconded a motion to adopt the resolutions.

Dr. J. W. Long: I agree most heartily with the sentiments expressed by Dr. Morse. I am sure that the members of this society are being cheated and will be cheated out of a great deal they ought to have by allowing papers to go on for an interminable time, or by allowing members to discuss them for an unusual length of time. I think, if you will allow me to say so, that I know something about the trials of a presiding officer. I appreciate your position, Mr. President, and I believe, with all due respect to the propounder of these resolutions, that this question can be solved better by this House of Delegates by asking the president to state from the chair that, whereas the by-laws limit the length of papers to twenty minutes and the length of the discussions to five minutes, the members are requested to adhere strictly to these by-laws, and to state also that the presiding officer will notify the essayist two minutes before his time is out; and also request that no member introduce a motion to extend the time to any one unless it be some distinguished visitor. If Dr. Morse will not feel that I am in conflict with his resolutions, or in any way antagonistic to what he has said, I will offer that as a substitute motion or as an amendment.

Dr. Morse: The very reason that I am in favor of making it impossible for the president to entertain a motion from the house is because it is hardly conceivable that some one would not vote that the time should be extended. That is why I am opposed to extending the time limit except to visitors from other States.

Dr. McBrayer: The chair would have to rule that a motion by the House of Delegates to refuse a motion in general session would probably not be in order, and I trust that Dr. Morse will not insist upon that. We are almost too democratic to refuse to entertain a motion of any kind that might be made.

Dr. Thompson: There is no reflection in this upon the paper that was read this morning, for it was a very copious and scholarly paper. Would it not be better to amend our by-laws so that there would be no extension of time unless by unanimous consent? There might be some cases where you would want to extend the time—there might be extenuating circumstances.

Dr. Parrott: It seems to me that the real purpose of the resolution is now accomplished; that long papers of any kind, no matter how valuable, should not be read. It is manifestly unfair to those who come after. Would it not be proper for us to change the by-laws so that no extensions will be granted?

Dr. Morse: I want to reiterate what I said a moment ago, that one does not want to be guilty of the seeming discourtesy of refusing to grant an extension.

Dr. Laughinghouse: With Dr. Morse's permission, I would like to amend his motion by requesting that the presiding officers be requested to adhere strictly to the by-laws.

It was moved and seconded that the resolutions be laid upon the table. This motion was carried.

Dr. McBrayer: I would like to state that the desire of the officers of your society is that the sessions be called to order promptly on time. The president and three delegates were here when the hour for meeting arrived. We waited for ten or twelve minutes, called the roll with six delegates present, and began business. Now, if those of us who are here will use our influence with our friends to come to the meeting on time, it will help us.

There being no further business to come before the House of Delegates at this session, the meeting was then adjourned.

Thursday, June 17.

The meeting was called to order by the president.

The report of the treasurer, Dr. H. D. Walker, was read by him, together with the report of the Auditing Committee.

TREASURER'S REPORT.

June 12 to December 31, 1914.

Amount on hand June 12, 1914	$1,997.33
Total amount received from dues June 12, 1914	492.00
Total amount received from floor space	180.00
Interest from January, 1914, to June, 1914	18.56
Interest from June, 1914, to January 1, 1915	28.42
Total	$2,716.31
Total amount expended since June 12, 1914	2,266.17
Amount on hand January 1, 1915	$ 450.14

H. D. Walker, *Treasurer.*

We, the acting finance committee, have examined the books of the treasurer, Dr. H. D. Walker, and found same correct.

June 16, 1915.

M. Bolton,
J. Ramey Parker.

AMOUNT PAID OUT SINCE JUNE 12, 1914, TO JANUARY 1, 1915.

J. D. Milans & Sons	$ 32.00
C. E. Gould	30.16
C. E. Gould	15.08
C. E. Gould	8.00
J. B. Lippincott Company	65.00
Alpha Photo-Engraving Company	2.85
Dr. J. A. Ferrell	21.37

M. K. Gilliam	$ 52.00
Dr. H. D. Walker	150.00
Dr. J. A. Ferrell	300.00
Creedmoor Publishing Company	5.00
Dr. H. D. Walker	17.25
Dr. M. M. Saliba	14.00
Dr. K. P. B. Bonner	20.50
Dr. Peter John	13.50
Tucker Building Pharmacy	4.00
Dr. J. L. Spruill	9.50
Dr. M. L. Stevens	11.10
Alpha Photo-Engraving Company	2.10
Yawman & Erbe Manufacturing Company	13.50
E. R. Carroll, manager	34.80
Miss Emily Boyd	6.00
Miss Mary Robinson	82.80
Miss Mary Robinson	6.46
M. K. Gilliam	18.60
Dr. J. M. Parrott	9.21
Dr. John A. Ferrell	10.00
Edwards & Broughton Company	89.81
T. B. Eldridge	14.00
Dr. L. B. McBrayer	9.34
Edwards & Broughton Printing Company	39.00
E. M. Uzzell & Co.	33.14
Edwards & Broughton Printing Company	1,110.35
Howard G. Brown	12.00
Miss Marian Edwards	3.75
Total amount paid out	$2,266.17

AMOUNT RECEIVED FROM COUNTY MEDICAL SOCIETIES FROM JUNE 12, 1914, TO JANUARY 1, 1915.

Anson	$ 4.00
Alamance	10.00
Bertie	2.00
Burke	2.00
Columbus	2.00
Cherokee	2.00
Caswell	2.00
Caldwell	2.00
Currituck	4.00
Cleveland	32.00
Cumberland-Hoke	46.00
Craven	4.00
Cabarrus	2.00
Duplin	14.00
Davidson	16.00
Edgecombe	2.00
Franklin	2.00

Forsyth	$ 2.00
Greene	2.00
Granville	4.00
Guilford	120.00
Gaston	2.00
Haywood	4.00
Halifax	10.00
Lincoln	2.00
Lee	16.00
Lenoir	4.00
Mecklenburg	12.00
Moore	2.00
McDowell	2.00
New Hanover	4.00
Onslow	18.00
Pasquotank-Camden-Dare	2.00
Pitt	16.00
Randolph	4.00
Rockingham	10.00
Rowan	4.00
Robeson	2.00
Stokes	2.00
Wayne	28.00
Washington-Tyrrell	16.00
Wake	54.00
Wilson	2.00
Total	$492.00

AMOUNT RECEIVED FOR FLOOR SPACE AT RALEIGH MEETING.

Hospital and Drug Company, Charlotte	$ 20.00
Welch Grape Juice Company	25.00
W. B. Saunders Company	15.00
C. V. Mosby Company	25.00
Charles R. Frost & Co.	15.00
McKee Surgical Instrument Company	20.00
Powers & Anderson	20.00
Mellin's Food Company	20.00
S. J. Pridgen & Co.	20.00
Total	$180.00

AMOUNT RECEIVED FROM EACH COUNTY SOCIETY SINCE JANUARY 1, 1915.

Alamance	$ 12.00
Avery	14.00
Brunswick	8.00
Beaufort	28.00
Bladen	14.00
Buncombe	128.00
Bertie	6.00

Burke	$ 32.00
Cherokee	20.00
Chatham	22.00
Craven	22.00
Carteret	14.00
Cumberland-Hoke	42.00
Columbus	16.00
Cleveland	28.00
Currituck	4.00
Chowan-Perquimans	12.00
Cabarrus	46.00
Caldwell	22.00
Catawba	30.00
Davidson	22.00
Durham	76.00
Duplin	8.00
Edgecombe	22.00
Franklin	22.00
Forsyth	70.00
Greene	10.00
Gaston	52.00
Guilford	80.00
Granville	24.00
Harnett	32.00
Halifax	8.00
Hyde	14.00
Hertford	4.00
Haywood	22.00
Iredell-Alexander	22.00
Jackson	10.00
Henderson-Polk	28.00
Johnston	40.00
Lincoln	28.00
Lenoir	22.00
Lee	14.00
Mitchell	4.00
Mecklenburg	122.00
Macon	8.00
Moore	28.00
Montgomery	18.00
Martin	26.00
McDowell	14.00
Nash	30.00
Northampton	22.00
New Hanover	50.00
Onslow	14.00
Pitt	26.00
Pasquotank-Camden-Dare	26.00
Pamlico	10.00
Person	22.00

Rutherford	$ 38.00
Robeson	34.00
Rockingham	28.00
Randolph	24.00
Rowan	24.00
Richmond	18.00
Stanly	28.00
Sampson	28.00
Stokes	24.00
Surry	38.00
Scotland	22.00
Transylvania	12.00
Union	30.00
Vance	22.00
Washington-Tyrrell	16.00
Wake	70.00
Wilson	42.00
Wayne	2.00
Warren	14.00
Wilkes	12.00
Yadkin	12.00
Total	$2,108.00

AMOUNT PAID OUT SINCE JANUARY 1, 1915, TO JUNE 10, 1915.

Dr. John A. Ferrell	$ 9.60
M. K. Gilliam	30.40
M. K. Gilliam	27.50
J. B. Lippincott Company	70.51
M. K. Gilliam	76.40
Dr. John A. Ferrell	12.35
H. D. Walker	150.00
Dr. John A. Ferrell	600.00
Dr. L. B. McBrayer	6.00
John A. Hodges	39.00
Total	$1,021.76

JANUARY 1 TO JUNE 10, 1915.

Amount on hand January 1, 1915	$ 450.14
Amount received from January 1, 1915, to June 10, 1915	2,108.00
Total amount received	$2,558.14
Total amount paid out	1,021.76
Balance on hand June 10, 1915	$1,536.38

H. D. WALKER, *Treasurer.*

We, the acting finance committee, have examined the books of the treasurer, Dr. H. D. Walker, and find same correct.

M. BOLTON,
J. RAMEY PARKER.

June 16, 1915.

Dr. Long: I move that the report of the treasurer be accepted.

While I am on my feet, I want to say that I do not think that any one, except the man who has served in that office, can quite appreciate the difficulties under which the treasurer labors, and I think Dr. Walker has rendered very efficient service, considering the difficulties with which he has had to contend, because there is no one so likely to put things off and postpone paying as the doctor.

Dr. Thompson: I think Dr. Long is quite right about that. The same idea entered my mind, and when two men as far apart as Dr. Long and myself, in looks, temperament, etc., have the same idea, I think it must be so.

Dr. Long's motion was seconded and carried.

The report of the Committee on Public Policy and Legislation was presented, and on motion of Dr. Thompson was accepted by the House of Delegates.

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION.

The undersigned committee beg leave to report that it held several meetings both before and during the session of the Legislature, and after going over the situation decided it would ask for some legislation governing medical expert testimony and the establishment of a hospital for the treatment of inebriates and drug habitués. After the Legislature assembled it was so apparent that no legislation requiring an appropriation could be passed without great effort, and as both these measures involved expenditure of money, it was deemed inexpedient to press them at this time; and the whole influence of the committee was concentrated into effort for financial aid of the State Board of Health, Bureau of Vital Statistics, State Laboratory of Hygiene, and other departments looking to the conservation of the health of the people. Notwithstanding the stringency of money and scarcity of State revenues, we were highly successful, and these institutions will not only be able to carry on their work as in the past, but in some instances with increased efficiency.

While we have secured no legislation of a general nature, special acts covering certain matters in which the profession is interested were secured, as will be seen from the proceedings of the Legislature.

Respectfully submitted,

J. M. Templeton,
J. M. Parrott,
For the Committee.

The report of the Committee on Nominations was read by the secretary of the committee, Dr. Laughinghouse, and was adopted by the House of Delegates.

REPORT OF COMMITTEE ON NOMINATIONS.

President	Dr. M. H. Fletcher	Asheville
First Vice President	Dr. J. L. Nicholson	Richlands
Second Vice President	Dr. L. N. Glenn	Gastonia
Third Vice President	Dr. W. N. Hardison	Creswell
Secretary	Dr. B. K. Hays	Oxford
Treasurer	Dr. W. M. Jones	Greensboro

Committee on Scientific Work—Dr. William deB. MacNider, Chapel Hill; Dr. William T. Carstarphen, Wake Forest; Dr. B. K. Hays, Oxford.

Committee on Public Policy and Legislation—Dr. J. M. Parrott, Kinston; Dr. J. M. Templeton, Cary; Dr. L. B. McBrayer, Sanatorium.

Committee on Publication—Dr. B. K. Hays, Oxford; Dr. Charles S. Mangum, Chapel Hill; Dr. J. P. Monroe, Sanford.

Committee on Obituaries—Dr. A. W. Knox, Raleigh; Dr. E. C. Moore, Elm City; Dr. I. W. Faison, Charlotte.

Finance Committee.—Dr. Carl Reynolds, Asheville; Dr. Joseph F. McKay, Buies Creek; Dr. L. D. Wharton, Smithfield.

Committee on Arrangements—Dr. E. E. King, Durham, chairman.

Delegates to Virginia Medical Society—Dr. S. F. Pfohl, Winston-Salem; Dr. W. H. Ward, Plymouth, alternate; Dr. I. M. Taylor, Morganton; Dr. E. J. Wood, Wilmington, alternate.

Delegates to the Medical Society of South Carolina—Dr. R. F. Leinbach, Charlotte; Dr. B. F. McMillan, Red Springs; Dr. L. E. Morse, Hendersonville; Dr. R. L. Payne, Monroe.

Place of meeting: Durham.

Time of meeting: Third Tuesday in April.

Dr. Thompson read the report of the Committee on the Secretary's Report, which was adopted.

REPORT OF COMMITTEE ON THE SECRETARY'S REPORT.

It is recommended that the thanks of the society be tendered to Dr. Walter C. Murphy for the donation of a set of the Transactions for the period 1843-1900, which now gives the society a complete set to date; and that the completed set be placed in the State Library at Raleigh.

It is recommended that a purchase of a cabinet and trunk for the use of the secretary be placed at his discretion; and that he be authorized to purchase the same.

It is recommended that, for the present, we continue the publication of the program and Transactions of the North Carolina Health Officers' Association, this association being the child of the State Medical Society and its transactions of great professional and public value.

Recommend that a committee consisting of Dr. A. A. Kent, Dr. J. Howell Way, and the secretary of the society be appointed to prepare a revised copy of the constitution and by-laws of the society as amended since 1903, and to report at the next annual meeting in accordance with section 11 of the secretary's report relative to the amendments and changes of the constitution and by-laws since 1903.

Recommend that the Board of Medical Examiners be requested to publish a compilation of the State Medical Laws, list of the licentiates, etc., in accordance with section 12 of the secretary's report.

Whereas Dr. John A. Ferrell has served our society for three years with great acceptability, having done a great deal to perfect the secretary's work, complete the society records, and materially increase its membership, be it

Resolved, That the House of Delegates tender to him the thanks of the society and this public expression of esteem.

Dr. Thompson: We had also in hand for consideration the report of the Board of Councilors. There were several valuable recommendations, but we did not see our way clear to taking action on all of them. However, I wish to report for the committee as follows:

ON THE REPORT OF THE BOARD OF COUNCILORS.

It is recommended that the president appoint a special committee to investigate the advisability of establishing a medical journal as the property and organ of the State Society, the committee to report their findings and recommendations at the next meeting of the society.

This report was adopted, and the president appointed a committee consisting of Dr. J. W. Long, Dr. Charles O'H. Laughinghouse, and Dr. J. Howell Way.

The Committee on Constitution and By-Laws had no report to make other than that given last year, the matter now being before the House of Delegates.

Dr. Thompson moved that the by-laws of the society be amended as recommended by the committee in 1914, but later withdrew this motion, upon being reminded by the president that amendments to the by-laws would have to lie over for one day, and amendments to the constitution for one year.

Upon motion of Dr. Thompson, duly seconded and carried, the secretary was directed to present to the county societies, in accordance with article 13 of the constitution, the proposed amendments to the by-laws and constitution, as printed on pages 594 *et seq.* of the Transactions for 1914, to the end that the matter contained therein may come before the next annual session of the society for definite determination.

Dr. Long: I want to introduce a matter here that I understand has not been very popular in the past, which is one reason why I want to introduce it, believing, with Macon, that the best way to succeed is to espouse a cause that is just and unpopular. What I am going to say might be summed up in the one word, "efficiency." I believe that the North Carolina Medical Society has grown to such proportions, and some of its children have grown to such proportions, and I refer to the Health Officers' Association and the Conjoint Session, that it is time for us to reorganize our forces. I think it would add to the efficiency and proficiency of our work as an association if we could separate and divide these matters in a different way. I want to say that I have no axe to grind, but am speaking only for the good of the society, and I believe we ought to quit having a conjoint session between the State Board of Health and the Medical Society. I want to follow that by saying that there is no feature of our society that is more valuable. If there is anything connected with our State Society that I am proud of, it is the work of the State Board of Health. I think it is superb. But I believe that what we ought to do here today is to have a committee appointed, consisting of one member from the State Board of Health, one member from the Medical Society, and one member from the Health Officers' Association, and let them consider this matter and make a report at our next meeting as to the best way of dealing with the proposition. I think the time has come when we should at least take some action looking to a greater degree of proficiency. In order to put the matter before the house, I move that a committee of three, consisting of a representative selected from each of these organizations, be appointed to consider the matter and report to the House of Delegates at our next annual meeting.

Dr. Wharton seconded this motion.

Dr. K. P. B. Bonner: It seems to me that this is a matter which should be seriously considered before any radical change is made. The State Board of Health is now carrying on an educational campaign, and it has been my experience that the average physician of North Carolina needs education as much as the layman.

Dr. Ferrell: I would like to call your attention to the fact that at present we have the Health Officers' meeting on Monday, we have the Conjoint Session on Wednesday, and we have provision for a Section on

Preventive Medicine and Hygiene. The society is required by law to have the Conjoint Session for the purpose of electing State officers. We can do nothing about the Health Officers' Association, as it is a separate entity. I imagine that what Dr. Long has in mind is to consider the possibility of bringing into one meeting all sessions devoted to public health.

Dr. Long's motion was seconded and carried, and Dr. J. W. Long, Dr. Cyrus Thompson, and Dr. D. E. Sevier were appointed as the committee to consider the matter.

Dr. Laughinghouse offered the following resolution, prepared by Dr. R. H. Lewis, which was adopted by the House of Delegates:

Whereas incurable blindness is one of man's greatest afflictions, peculiarly embittered when it is known too late that it might have been prevented; and whereas we learn from the excellent paper of Mr. Ray, principal of the State School for the Blind, read before this society at this meeting, that at least 20 per cent of the hopelessly blind in our State have lost their sight from ophthalmia neonatorum, an easily preventable disease; and whereas the mission of the true physician is to prevent as well as to cure disease: Now, therefore, be it

Resolved, That the Medical Society of the State of North Carolina indorses the position on this subject taken by our president in his thoughtful and progressive address, and in order to carry out his recommendations he is hereby requested to appoint a committee of five, of which committee the secretary of the State Board of Health and the principal of the State School for the Blind shall be members, who shall make every effort to promote this object; and

Resolved further, That the board of directors of the State School for the Blind be requested to coöperate with the said committee in this work.

A committee consisting of Dr. R. H. Lewis, chairman; Dr. W. S. Rankin, Mr. John E. Ray, Dr. C. W. Banner, and Dr. Louise Merrimon Perry was appointed by the president.

Dr. Kirk presented the name of Dr. J. A. Griffin and Dr. Laughinghouse that of Dr. B. L. Long of Hamilton to be added to the list of honorary fellows.

Dr. McBrayer requested that the secretary add all these names before the Transactions were printed, and that any member of the society knowing any name that should be added communicate with the secretary.

Dr. Ferrell moved that Dr. Saliba's statement for $5.25, for expenses in connection with his work as chairman of the Board of Councilors, be paid. This motion was carried.

There being no further business, the House of Delegates then adjourned.

REPORT OF BOARD OF COUNCILORS.

We, your Board of Councilors, beg leave to report that we recommend that Dr. Paul V. Anderson be elected an honorary member of our society.

We beg to report further, that the action of the Pasquotank-Camden-Dare Counties Medical Society against Dr. H. D. Walker came before our board for consideration, and our decision was that on account of the evidence as brought to us, Dr. Walker is sustained and the society is ordered to reinstate him to membership.

K. P. B. Bonner,
Secretary.

CONJOINT SESSION

OF THE

STATE BOARD OF HEALTH AND THE STATE MEDICAL SOCIETY.

The Conjoint Session was called to order by Dr. J. Howell Way of Waynesville, president of the State Board of Health.

Dr. Way: Before having the annual report of the secretary submitted for our consideration, I desire, on behalf of the board, to announce the voluntary retirement from the board, on the occasion of his election to the last General Assembly, of Dr. A. A. Kent, one of the distinguished members of the board, on account of his inability to remain a member of the board and also exercise his functions in the General Assembly.

Dr. Kent's work as a member of the State Medical Society, as a member of the State Board of Health, and as a citizen of the State of North Carolina, needs no encomium from me. It speaks for itself. But I feel that in his retirement it should go upon the minutes of the State Medical Society, and I therefore submit the following resolution, and ask you to unanimously approve it:

A RESOLUTION OF THE NORTH CAROLINA STATE BOARD OF HEALTH ON THE RETIREMENT OF DR. A. A. KENT AS A MEMBER OF THE BOARD.

Whereas it became necessary, under the laws of North Carolina prohibiting the holding of dual State offices, for Dr. A. A. Kent, on his election to the General Assembly of North Carolina, to retire as a member of the North Carolina State Board of Health; and whereas the loss of Dr. Kent's counsel to the board has become the gain of Dr. Kent's counsel to the State: Therefore, be it

Resolved, That the North Carolina State Board of Health do hereby officially record their appreciation of Dr. Kent's past services as a member of this board and their appreciation of his able, untiring, and successful work in the General Assembly of 1915 in the interests of Public Health in particular and the State in general.

This resolution was adopted by a rising vote.

ANNUAL REPORT OF THE SECRETARY OF THE STATE BOARD OF HEALTH.

W. S. RANKIN, M.D., SECRETARY.

Messrs. President and Members of the Conjoint Session of the North Carolina State Board of Health and the North Carolina Medical Society:

INTRODUCTORY.

The laws of North Carolina give this society four out of the nine directors composing the State Board of Health, and in so doing give the North Carolina Medical Society 45 per cent of the stock of State health work. This is the State's official recognition of the intelligent and unselfish interest of the State medical profession in the conservation of human life. The State and the profession are partners in this great work, and for that reason the State requires that the Board of Health shall keep this society informed through an annual report on the board's activities.

LEGISLATION.

The General Assembly of 1915 followed the good example of its predecessors in public health legislation. This Assembly increased the total appropriation of the State Board of Health from $40,500 annually to $50,500 annually for 1915, and to $55,500 annually for 1916. Out of this appropriation the General Assembly authorized the production and distribution, either free or at a minimum cost, of certain biological products such as diphtheria antitoxin, tetanus antitoxin, and the different vaccines, providing an additional appropriation of $15,000 for the construction of a biological laboratory. For the tuberculosis work of the board the General Assembly increased the annual maintenance appropriation from $20,000 to $25,000, and, in addition, appropriated $10,000 for the educational work of the Bureau of Tuberculosis. For construction the General Assembly gave the Sanatorium $60,000, out of which about $41,000 or $42,000 will be used in permanent improvements. The remainder of the $60,000 will be used to pay off the old debts of the Sanatorium. Another important piece of legislation was the amendment to the Vital Statistics Law requiring burial permits in rural sections as in urban settlements, thereby making the law comply with the requirements of the United States Government and conform with standard vital statistics laws throughout the country. The law fixing the tenure of office of county physicians was amended so that counties employing

county physicians may terminate the service of the county physician at any time the county sees fit to elect a whole-time county health officer. Still another important piece of legislation was the act permitting counties and cities to appropriate funds for the partial or complete payment for the treatment of their needy but deserving tuberculous citizens in the State Sanatorium.

The State medical profession was well represented in the General Assembly of 1915 by the following members of the profession: Drs. A. Capehart, A. M. Dula, A. A. Kent, P. B. Killian, R. L. Carr, G. A. Foster, and P. J. Macon. Dr. A. A. Kent, former president of this society and a former member of the State Board of Health, representing the county of Caldwell, is especially deserving of the appreciation of the society for his official activity in behalf of public health matters and professional interests in general.

ORGANIZATION.

You will recall that we pointed out last year, in our annual report, the differentiation of the work of the board into departments or bureaus to permit of greater efficiency through specialization of the various bureaus or departments in the execution of the more important health policies adopted by the board. This report and future reports will naturally take the form of a statement of the progress of the work of the bureaus now in existence and the indications for developing other bureaus or departments.

THE STATE LABORATORY OF HYGIENE.

To this division of the executive staff of the Board of Health is intrusted (*a*) the examination of all public water supplies to forestall outbreaks of water-borne diseases, (*b*) the examination of excretions and secretions and pathological specimens submitted by the medical profession to assist the profession in correct diagnosis and effective treatment, and (*c*) the furnishing of curative sera at a minimum cost.

The work of the State Laboratory of Hygiene for the last six years is shown by chart. The lowest line of figures represents last year's work. I call attention to the fact that the laboratory made a 25 per cent gain in its routine work last year, and, in addition, distributed 11,006,000 units of diphtheria antitoxin as against 9,254,000 units for the preceding year, and distributed 137,211 doses of typhoid vaccine as against 30,000 doses for the preceding year.

CHART I—*Regular Work of the State Laboratory of Hygiene for Last Six Years.*

Years.	Appropriation.	Water.	Sputa.	Widals.	Diphtheria.	Rabies.	Pasteurs.	Malaria.	Urine.	Gonococci.	Pathological.	Miscellaneous.	Totals.	Growth, Per Cent.
1909-1910	$6,000	1,680	516	264	377	148	158	69	92	34	88	25	3,451	66
1910-1911	6,000	1,920	771	460	364	159	165	119	58	52	39	20	4,127	16.3
1911-1912	8,500	2,449	924	732	547	199	195	132	92	48	38	41	5,397	23.5
1912-1913	8,500	2,183	1,091	790	660	298	259	196	83	78	39	28	5,705	5.4
1913-1914	13,000	2,988	1,473	1,094	593	371	231	292	133	92	28	24	7,319	22
1914-1915	14,750	4,669	1,605	1,382	896	297	193	340	177	105	73	50	9,787	25

Some time will be required to construct and equip the biological plant for the production and distribution of vaccines, antitoxins, and sera. When the laboratory is in a position to distribute these materials, official notice will be given to the profession and public as to both the time and conditions on which these biological products will be supplied.

The laboratory this year is operating on a budget of about $17,000, and next year will have available for its work an annual budget of $21,000.

THE BUREAU OF EDUCATION AND ENGINEERING.

To this division of the executive staff of the Board of Health is intrusted the work of interesting and educating the public generally in sanitation and hygiene. In carrying out this purpose the bureau published and distributed last year 47,000 copies of the *Bulletin* every month. The society is familiar with the character of the *Bulletin*, and no comment is called for. The bureau supplied 31 daily papers with 162 news articles and 275 weekly papers with 140 news articles relating to sanitary and hygienic subjects, or, briefly, the bureau published through the State press about one article a day.

Another means used by the Bureau of Education in carrying out its purposes is the health exhibit. Our health exhibit has been very favorably commented upon, especially during its recent display along with other health exhibits at the meeting of the American Public Health Association at Jacksonville, Fla. During the past year the exhibit has been displayed in full or in part at the following places: Asheville, Hendersonville, Smithfield, Winston-Salem, Burlington, and Greensboro, N. C.; at Jacksonville, Fla.; and at the Panama-Pacific Exposition, San Francisco, Cal. It is estimated that 100,000 persons have seen the

exhibit during the year. The exhibit is loaned to any person or organization upon payment of the transportation charges. Several future engagements are already scheduled. The bureau is now planning a number of miniature parcel-post exhibits on such subjects as typhoid fever and tuberculosis which can be used in connection with the typhoid dispensary work and in connection with the school work in the fall.

Another means of influencing public opinion that is being employed effectually by the bureau is the stock illustrated lecture. This consists of the loan of an outfit to any person willing and able to use it. The outfit can be mailed for from 20 to 35 cents parcel post. It consists of a lantern, a stock lecture, and from 50 to 75 slides to accompany and illustrate the lecture. These outfits deal with such subjects as typhoid fever, tuberculosis, patent medicines, etc. The bureau now has nine of these stock lectures. The stock lectures are used by teachers, preachers, Y. M. C. A. workers, and other progressive citizens for developing health interests in their communities. It is not always necessary to loan the lantern, as many of our coöperative friends have lanterns or can borrow them from some one in the community where the lecture is to be given. Through these stock lectures a total audience of about 10,000 people was reached last year.

The bureau has prepared placards such as you have before you on the subjects of typhoid fever, tuberculosis, flies, and spitting, and is now arranging to have these placards posted in every post-office and in many of the mills, factories, and shops of the State.

The engineering work of the bureau for the past year has consisted of passing and giving engineering advice upon 27 public water supplies and 47 sewage disposal plants.

The correspondence of the bureau during the past year has amounted to about 4,000 personal letters. This bureau is now operating upon a budget of $10,000 a year.

BUREAU OF VITAL STATISTICS.

To this division of the executive staff of the Board of Health is intrusted the work of collecting, classifying, and recording the births and deaths of the State according to race, county, town, and township; and further classifying deaths according to cause and age. This bureau is the State's biometer. From its records we locate the enemy and plan the policies of the State Board of Health accordingly. Through the records of this bureau the public is to know the progress or lack of progress in the State's health work.

The work of this bureau, which has been collecting vital records since the first of December, 1913, is shown on Chart II, which compares the certificates received for the first five months of 1914 with the number of certificates received for the first five months of 1915. The death rate and birth rate for the State are 13.4 and 29, respectively, as compared with the registration area rates of 14.1 and 26.

CHART II—*Total Monthly Returns of Births and Deaths for First Five Months of 1914 and 1915.*

1914.				1915.			
Month.	Births.	Deaths.	Total.	Month.	Births.	Deaths.	Total.
January	3,867	2,496	6,363	January	5,094	2,861	7,955
February	2,867	1,976	4,843	February	5,152	2,778	7,930
March	4,873	2,792	7,665	March	6,010	3,593	9,603
April	5,329	2,537	7,866	April	6,389	3,498	9,887
May	6,523	3,035	9,558	May	7,853	3,164	11,017
	23,459	12,836	36,295		30,498	15,894	46,392

The comparison of North Carolina registration work with the only other two Southern States now in the registration era, Kentucky and Virginia, is shown on Chart III. Kentucky and Virginia have been accepted as registration States for over a year.

CHART III—*Comparative Statement of Death Rates for North Carolina 1914, Kentucky 1913, and Virginia 1913.*

NORTH CAROLINA, 1914.		KENTUCKY, 1913.		VIRGINIA, 1913.	
CITIES.		CITIES.		CITIES.	
Total	22.4	Total	17	Total	19
White	17.1	White	14.9	White	14.8
Colored	31.2	Colored	26.6	Colored	26.8
RURAL.		RURAL.		RURAL.	
Total	11.7	Total	12.3	Total	12.7
White	10.4	White	11.5	White	11.1
Colored	14	Colored	18.9	Colored	16

The other vital statistics charts, IV and V, give the birth rates and death rates of the counties of North Carolina in the order of the rates for 1914. Find your county.

CHART IV—*Birth Rates by Counties, Based on the Estimated Population of 1914.*

Clay	54.4
Pamlico	48.9
Camden	45
Ashe	43.3
Alexander	43.1
Warren	43.1
Transylvania	43
Stanly	41.9
Yancey	41.2
Stokes	40.8
Hertford	39
Perquimans	39
Sampson	38.2
Gates	37.4
Montgomery	36.8
Cleveland	36.7
Johnston	36.6
Cabarrus	36.1
Henderson	36
McDowell	35.9
Polk	35.8
Davidson	35.4
Haywood	34.9
Gaston	34.8
Orange	34.6
Brunswick	34.5
Martin	34.4
Person	34.3
Franklin	34.2
Wilkes	34
Chowan	33.5
Union	33.5
Anson	33.2
Dare	33.1
Cherokee	33
Wake	32.6
Wilson	32
Iredell	31.8
Watauga	31.3
Tyrrell	31.1
Harnett	31.1
Catawba	31.1
Forsyth	31.1
Washington	31
Guilford	30.9
Macon	30.9
Madison	30.9
Edgecombe	30.7
Randolph	30.5
New Hanover	30.5
Surry	30.4
Swain	30.4
Caswell	30.1
Greene	30.1
Lee	30.1
Pender	30.1
Bladen	29.9
Beaufort	29.7
Yadkin	29.5
Alamance	29.4
Vance	29.4
Halifax	29.3
Chatham	28.8
Columbus	28.7
Burke	28.6
Davie	28.4
Mecklenburg	28 2
Scotland	28.2
Duplin	28
Wayne	28
Lincoln	27.6
Rockingham	27.4
Pitt	27.1
Richmond	27
Moore	27
Avery-Mitchell	26.5
Carteret	26.1
Rutherford	25.9
Granville	25.7
Durham	25.4
Rowan	25.2
Bertie	25
Nash	24.4
Northampton	23.6
Buncombe	23.2
Hoke	22.9
Onslow	22.3
Lenoir	21.9
Cumberland	21.1
Caldwell	21
Jackson	20.6
Graham	20.1
Robeson	20
Craven	18
Pasquotank	15.7
Currituck	11.4
Jones	11.3

CHART V—*Death Rate by Counties, Based on the Estimated Population of 1914 (Exclusive of Still-births).*

New Hanover	23.5
Edgecombe	19.2
Forsyth	17.1
Craven	17
Wake	17
Pasquotank	16.7
Mecklenburg	16.3
Halifax	16.1
Wayne	16.1
Vance	15.9
Warren	15.8
Durham	15.5
Cabarrus	15.4
Wilson	15.4
Buncombe	15.3
Guilford	15.1
Clay	14.3
Chowan	14.1
Hertford	14
Martin	14
Franklin	13.4
Gaston	13.4
Henderson	13.2
Hyde	13.2
Scotland	13.1
Perquimans	13
Cumberland	12.9
Iredell	12.8
Orange	12.6
Chatham	12.4
Alamance	12.3
Carteret	12.3
Bertie	12.1
Pitt	11.9
Transylvania	11.9
Harnett	11.8
Person	11.8
Polk	11.8
Dare	11.5
Northampton	11.5
Richmond	11.5
Rowan	11.5
Sampson	11.5
Washington	11.4
Davidson	11.1
Randolph	11.1
Columbus	11
Nash	10.9
Brunswick	10.7
Tyrrell	10.7
Avery-Mitchell	10.6
Onslow	10.6
Caswell	10.5
Greene	10.5
Beaufort	10.4
Rockingham	10.4
Stanly	10.4
Bladen	10.3
Rutherford	10.3
Burke	10.2
Catawba	9.9
Cleveland	9.9
Lincoln	9.9
Johnston	9.8
Anson	9.7
Hoke	9.7
Lenoir	9.7
Moore	9.7
Pender	9.7
Stokes	9.5
Caldwell	9.4
Surry	9.4
Cherokee	9.2
Granville	9.1
Duplin	9
Macon	9
Montgomery	9
Yancey	9
Camden	8.9
Robeson	8.9
Davie	8.8
Gates	8.8
Union	8.8
Alexander	8.7
Lee	8.7
Swain	8.7
Currituck	8.6
McDowell	8.6
Pamlico	8.6
Ashe	8.5
Haywood	8.5
Wilkes	8.4
Madison	8.2
Yadkin	8
Watauga	7.7
Alleghany	7.6
Jones	7.1
Jackson	5.7
Graham	2

The expenses of a bureau for vital statistics are always heaviest during the first two or three years work, that is, during the period necessary for the education of the public as to the importance and methods of registration work. The postage bill of the bureau at present is running

at the rate of about $275 a month, or $3,300 a year. A great deal of this postage is used in returning incomplete and carelessly prepared records. The record of a child's birth and the record of a death constitute the only official records of a life, and will be here probably when all evidences of a life, including the marble slab, have passed away. It is wrong and a violation of the law for the State to accept and permanently file a record that is carelessly made out and incomplete; you would not want your child's birth or death so recorded. Hence the large postage bill to get correct certificates.

It is costing our office something like $40 a month to have the certificates corrected for pneumonia, tuberculosis, cancer, and violent deaths alone. Physicians will make out certificates with the cause of death as pneumonia, and we have to return the certificate to find out whether the pneumonia was lobular or lobar, two very different diseases; the physician will make out the certificate with tuberculosis as the cause of death, and we have to return the certificate to get it corrected to show whether the cause of death was tuberculosis of the lungs, the pleura, the peritoneum, or generalized tuberculosis, or some other form of tuberculosis; the physician will make out the certificate with cancer as the cause of death, and we have to return it to find out whether the cause of death was cancer of the skin, of the breast, of the stomach, of the uterus, or of some other organ; a certificate will come in with the cause of death stated as violence, and we have to return the certificate to find out whether the violence was accidental, homicidal, or suicidal. We are not complaining, nor criticising the profession. These difficulties in statistical practice are common to all States and can only be gotten rid of as the profession becomes accustomed to standard statistical methods. Nevertheless, the doctors can save us money that may be used in other public health work by referring oftener to the Physician's Pocket Reference, copies of which have been supplied the profession.

The budget of the Bureau of Vital Statistics for this year will be in the neighborhood of $16,000. After this year we believe this bureau can operate on a budget of about $12,000 to $13,000, and, in seven or eight years, through the revenue derived from fees for transcripts of certificates, the cost of the bureau to the State can be reduced to somewhere between $8,000 and $10,000 a year.

THE BUREAU OF TUBERCULOSIS.

The plans for this bureau, now in satisfactory process of execution, call for a sanatorium, operating at present with 90 patients, and a correspondence school for tubercular persons, the latter to shortly begin its

work. Dr. McBrayer was recently asked by Dr. W. S. Leathers, Director of Sanitation of Mississippi, for complete details of our tuberculosis policy, Dr. Leathers having in mind the North Carolina plan for his own State. Dr. J. A. Hayne, secretary of the State Board of Health of South Carolina, recently told the writer that in appearing before a legislative committee of his State in behalf of an appropriation for tuberculosis he quoted to good effect the pamphlet outlining our State policy. The official attention which our tuberculosis policy is receiving in other States increases our confidence in our plan of work.

The first year's work of the Sanatorium under the State Board of Health was carried out under difficulties sufficiently formidable to test the resourcefulness, patience, and faith of Superintendent McBrayer. Starting with a maintenance appropriation of only $20,000, out of which we were informed, when we accepted the responsibility for the institution, we would have to pay $4,000 on debts already incurred, we found later that the institution owed $14,000. Satisfying insistent and somewhat incredulous creditors, and, at the same time, obtaining further supplies on a very meager budget for from 75 to 90 consumptives, has not made the position of superintendent during the last year a very enviable one.

Nevertheless, from June 1, 1914, to June 1, 1915, 341 patients have been treated at the Sanatorium. Of this number, 5 have died, 336 have returned to their homes, 55 arrested, 200 improved—all of them less dangerous as conveyors of infection to their families and associates. During this same time 125 suspected cases of tuberculosis have been examined by the medical staff of the Sanatorium. Most of these patients were referred by their physicians. Some came of their own accord, while others came of their own volition after they had been pronounced nontubercular by one, two, and sometimes three physicians.

With the appropriation made by the General Assembly of 1915 the old debts have been paid.

The contract for a new building of 50 beds, which will increase the capacity of the Sanatorium to 150 beds, has been let. As there will always be a number of patients at the Sanatorium whose condition requires hospital facilities—patients who have recently arrived and who have not been restored to their feet, and patients stricken with some complication, as a hemorrhage or some intercurrent disease—the new building will afford facilities not found in the cheaper type of building, such as shacks, cottages, and lean-tos. Dr. McBrayer's building plans contemplate using both types of buildings, the more convenient and expensive hospital type and the less convenient but more economical cot-

tage and lean-to type in the proportion of about one bed of the former to two beds of the latter. This combination couples efficiency with economy, and we hope will commend itself to thoughtful people.

The funds necessary for the enforcement of the act requiring the reporting of all cases of tuberculosis have just become available, and this act, on which will be established the correspondence school for tuberculosis, will be put into effect immediately.

One of the most encouraging features of the antituberculosis work is the sympathetic interest and support of the public as expressed through the press and through the material assistance rendered the patients in the Sanatorium by social, fraternal, and religious organizations and by individuals. Miss Angie Gilbert of Saluda, N. C., and Dr. J. C. Hoyt of Washington, N. C., left bequests to the Sanatorium. The outlook for donations from individuals and some definite work by the Federation of Women's Clubs is reasonably certain. The law enacted by the last General Assembly which allows counties or towns to pay partially or wholly for the treatment of their needy but deserving consumptives will undoubtedly furnish a source of revenue to the Sanatorium and prove of mutual advantage to both the Sanatorium and the counties that become interested.

THE BUREAU FOR THE ERADICATION OF HOOKWORM DISEASE.

To this division of the executive staff was intrusted the problem of eradicating hookworm disease in particular, and of decreasing the prevalence of fecal-borne diseases generally. The work of this bureau terminated May 1, 1915. As you recall, this work began in March, 1910, on finances appropriated from the million-dollar Foundation given by Mr. Rockefeller in the fall of 1909 for the eradication of hookworm disease in the South.

During its existence this bureau has examined 267,999 North Carolinians for hookworm infection, a little more than one-eighth of the population of the State. Of this number, 78,977 have been microscopically diagnosed as infected with hookworm disease, and 95,618 have been treated. This work cost the counties $20,394.96; the State $15,119.11; and the Rockefeller Sanitary Commission $68,653.28; a total of $104,-064.37, making the cost per case treated $1.088.

In 1914 the form of the work of the Hookworm Commission was changed from the dispensary to what is known as the community plan of work. The community plan of work consisted in selecting a rural community of from 6 to 10 square miles, with from 500 to 1,000 citizens, and attempting to install an improved privy in every home in the com-

munity. Fifteen communities, comprising a total area of 369 square miles, with a total population of 11,378 people—an area and population corresponding to half of an average county—have been worked. The community work has cost the counties in which the communities were located $847.77; the State $5,764.84; and the commission $12,862.95; a total of $19,578.54. Seventeen hundred and ninety-six improved privies have been constructed, making the average cost to the bureau $10.901 for each privy improved.

Of course, the figures express only the tangible results of the work of the Rockefeller Sanitary Commission in North Carolina, and not the intangible results, which must not be lost sight of. A privy is a valuable sanitary asset to a home; but what the privy stands for, the type of family intelligence and refinement that it expresses, is a thing of much greater value than the privy itself; and this moral educational influence of the commission's work in North Carolina is over and above the story told in figures. The influence of this work has been of great value in molding public sentiment favorable to the extension of public health activities along all other lines of sanitary endeavor. The State Board of Health at this annual meeting has adopted suitable official resolutions expressing the appreciation of the State and the profession to the Rockefeller Sanitary Commission for its valuable coöperation during the past five years.

THE BUREAU OF RURAL SANITATION.

To this division of the executive staff of the State Board of Health is intrusted the work of developing intelligent local self-government in rural sanitation in North Carolina. Ninety per cent of the population of this State is rural; North Carolina has a larger proportion of rural citizens than any State in the Union; efficient rural sanitation is an absolute essential to any considerable reduction in this State's death rate. The entrance of a county into coöperative fellowship with the State in its effort to conserve human life is like the entrance of an Italy or Greece on the side of civilization. To realize its object, the establishment of intelligent local sanitary self-government, the bureau is following two methods:

One method, well under way, is the employment of whole-time county health officers by the counties. We now have, and have had for the last thirty months, ten North Carolina counties employing whole-time health officers. The ten whole-time men are men of more than average ability, and to these men and these counties we look for the development and establishment of an effective system of county health work if efficient local sanitary administration can be developed in that way. The atti-

tude of the State Board of Health to the whole-time county health officers at present is one of watchful waiting, with, I should say, considerably more confidence in the men in charge of the sanitary problems of these ten counties than Mr. Wilson had in the officials of his southern neighbor. We think it best to leave the whole-time health officers the widest latitude of discretion in the experimental development of county health administration, standing ready at all times to help them in every way we can whenever they call upon us.

Another method just beginning, but already with such impetus as to make its further prosecution more or less obligatory, is what we are pleased to term the unit system of county health work. In this unit system of county health work the Bureau of Rural Sanitation takes a definite county health problem, works out on paper every detail in its solution, attaches thereto the most economical and exact budget on which the problem can be handled, submits these plans and specifications to the county authorities and secures their agreement to defray the actual expenses of the work as submitted. To illustrate: The bureau finds, and has worked out in minutest detail, a method by which a six-weeks movable county dispensary for vaccinating the people against typhoid fever and educating those that attend the dispensary in sanitary matters can be held in the average county of North Carolina at a cost to the county of about $325 to $350; the plan is presented to the county physician for his indorsement and then to the board of county commissioners, explained to them in detail, and on the board of county commissioners agreeing to place at the disposal of the State Board of Health the amount called for in the budget, the work is carried out in coöperation with the county physician through agents employed by the State Board of Health.

Another unit of county health work, which will illustrate the principle, and which will be carried out in several counties this fall and winter when the schools are in session, is the unit of school sanitation. This unit couples medical inspection of the schools with community sanitary instruction. We are now in position to offer, and will offer, to from four to eight selected counties this fall the following definite proposition: In consideration of about $450, $225 from the county commissioners and $225 from the county school board, to be paid to the State Board of Health, the board agrees to put an officer, specially trained in medical inspection of schools and well equipped for giving illustrated lectures on sanitation in the county, to perform the following schedule of duties: To arrange for a school health day in each white school in the county; to visit each white school in the county on the day observed by the school as health day; to reach the school at 10 a. m. on the health day; to seek

to interest and assist the teacher in the teaching of sanitation; to question the children on a health catechism previously supplied them, and to distribute prizes for excellence in knowledge of the catechism; to make a thorough medical inspection of the children for the common defects, and to notify, by an official card, the parents of defective children of the condition of the child; to file with the State Board of Health the addresses of the parents of defective children in order that the central office may keep in touch with the parent, through a system of correspondence, until the child is properly treated; and, lastly, to give several illustrated lectures on the significance of the common defects and other sanitary subjects to the parents and children (these several lectures to be separated by the reading of compositions on sanitary topics by the children and entertainment features), as previously announced for the evening of the day on which the school is visited. A full program for the Board of Health official, but not too heavy when he gets two days a week, Saturday and Sunday, for rest. He can make five schools each week and complete an entire county with forty-five schools in nine weeks.

There are many other units of county health work which will have their plans and specifications thoroughly worked out by the time we can use the plans. You may be interested to know that we have discussed this unit system with the Federal Children's Bureau, and it is not improbable that the bureau and the Board of Health will coöperate in the development and launching of a unit of county health work dealing with infant mortality, a factor next in importance to tuberculosis in the death rate.

We began the unit system of health work in April of this year. Our first move was to get ten counties to put on the typhoid vaccination unit this summer. We have ten counties already. The ten counties have made a total appropriation of $4,100 for this work.

The unit system gives the people an absolutely definite health problem, carefully planned and carried out under expert supervision; it is the scheme by which we hope to bring into active and effective coöperation with the State forces the ninety counties that are not employing whole-time county health officers; it is a plan that will tend toward the systematizing and standardizing of local health work; it is a plan that will liberate the whole-time county health officer from work that rightfully belongs, with the fees that go with it, to the practicing physicians. I refer to medical practice for county institutions, to other charity cases, to autopsies, to examinations for lunacy, and expert court opinions, by which the whole-time man is often tied up to a court and caused to lose a whole week from real needed health work.

As compared, the two methods, the whole-time county health officer method and the unit system of county health work method, differ in important particulars. The whole-time health officer method proposes to a county the means to an end; the unit system proposes an end—a definite health problem with plans, specifications, and budget. The whole-time health officer is a full dose—a $3,000 to $4,000 dose—of health work; the unit system is health work in broken doses; counties whose financial stomach is too weak for the former may accept and retain the latter. With the whole-time health officer method, the county does its own health work; with the unit system, the county pays the State, the wholesaler in sanitary wares, to do its health work for it at a price mutually agreed upon. Both methods are now on trial. We shall see their advantages and disadvantages.

The Bureau of Rural Sanitation is the youngest bureau—the baby of the board. We are crazy over the baby. We are confident of its future. And why shouldn't we be, when the baby has for its nurse Dr. G. M. Cooper, the nurse that raised Sampson!

Dr. W. R. Kirk, Hendersonville: I would like to ask Dr. Rankin if the matter has ever been settled about the registration of nonresident deaths. We took up the matter in Henderson County, and it has been agitated in Buncombe. The situation is like this: We have a great many people coming from a distance to our county. They die there, their deaths are recorded there, and Henderson County has those deaths against her record. What we want to do is to separate these nonresident deaths from the resident deaths, so that we shall know exactly the number of deaths for which we are responsible. We are willing to shoulder the responsibility of our own deaths, but not of the deaths of persons coming from the outside. I should like to know if anything has been done about this matter.

Dr. J. W. McNeill, Fayetteville: It seems to me that we should not let this opportunity pass by without commending Dr. Rankin for the zeal and enthusiasm with which he has carried out this work, and the great amount of work that he has done. I think we should thank him for his work in this line.

Dr. Oscar McMullan, Elizabeth City: I should like to ask one question. Is tuberculosis a reportable disease, and, if so, to whom should we report it?

Dr. W. S. Rankin, Secretary: I will reply to the questions in the order in which they were asked.

As to the registration of nonresident deaths: In the first place, the only value vital statistics have is their comparative value. That the

death rate of North Carolina is 15 means absolutely nothing unless you know the death rate of the other forty-eight States. It is the comparison which makes statistics valuable. Now, if we are going to compare birth or death rates of one State with another, as we have to do, the method of collection and tabulation of these statistics must be uniform throughout the United States. Therefore, it is the function of the United States Government to standardize the methods of statistical practice, and that is what is done in the model law. The United States will not accept statistics from this State unless we employ the same methods as are employed in other States. The statistics otherwise would be valueless to the world.

The same principle applies to a county, and we have to consider the National Government in the collection of statistics from the county. It is undoubtedly true that in certain places in the United States the apparent death rate is much greater than the real death rate, *i. e.*, the total death rate as composed of the death rates of residents and nonresidents. Nonresidents dying in Henderson County are charged to that county; the deaths of residents of Henderson County dying in other places are not charged to Henderson County.

The American Public Health Association has a section on Vital Statistics, one of the ablest committees that it is possible to get together, which is to deal with the method of scoring nonresident deaths. That committee is now at work, and will report this fall. Something has to be done about the reporting of nonresident deaths, and in time a policy will be worked out. In the meantime, the only thing a town or county can do is to point out on its charts the number of deaths of residents and nonresidents.

As to the reporting of tuberculosis, the profession will receive an official notice from Dr. McBrayer within the next thirty or sixty days, calling their attention to the necessity of reporting tuberculosis.

In reply to Dr. McNeill's kind remarks, I wish to call attention to the fact that the work of the State Board of Health is the work of a whole staff, and if the State Board of Health deserves any credit, it is due to the selection of the right kind of men, and the kind of work that Mr. Booker, Dr. Shore, Dr. McBrayer and the others are doing.

Dr. Way: I wish to announce that Dr. F. R. Harris of Henderson has been elected by the State Board of Health to fill the unexpired term of Dr. Kent. Dr. Harris's high professional standing and his great interest in everything that concerns the organized medical profession, the State and the people are well known to you, and I feel sure that he will make a valuable addition to the board.

I also have pleasure in announcing to you the reappointment, to succeed himself, as member of the State Board of Health for a term of six years, of Col. J. L. Ludlow, and I may with truth say of him, as I did of Dr. Harris, that he needs no introduction to this body, having served with honor to himself and credit to the State two terms of two years each by appointment of Governor Scales and Governor Fowle from 1889 to 1893, and as a member of the board continuously since his appointment in 1901 by the beloved Governor Charles B. Aycock. In addition, the Colonel enjoys the unique distinction of being the only lay member of this society, an honor conferred by unanimous vote several years since.

I desire further to announce to you that at an official meeting last night of the State Board of Health the board elected as secretary, to succeed himself, for a term of six years, Dr. Watson S. Rankin.

I want to thank Dr. McNeill for his kindly remarks in regard to the work Dr. Rankin has done. Every word he said is true, and only partially tells the story of Dr. Rankin's splendid and successful endeavor. But without detracting from the work of Dr. Rankin, I want to say that the work is the result of the united efforts of the men on the staff, Dr. Rankin, Dr. Shore, Dr. McBrayer, Mr. Booker, etc., and also to their subordinates and assistants.

I wish also to remind you that this board is peculiarly responsible to the people. In no other State are the medical boards so controlled by the profession, as in the State of North Carolina. The members of the State Board of Health are appointed by you and by the Governor. The personnel of the State Board of Medical Examiners is appointed solely by the society. These are your boards. I am glad there is such an intimate and close relation between these boards, and between them and the practitioners of North Carolina. Public health work owes its genesis primarily to the research and advances of medical men. It will succeed or fail in any community by just so much as it has the support and coöperation of the medical practitioners of that community. I want to emphasize this latter thought, and ask that the work of the State Board of Health continue to have, as I feel that it now has, the cordial sympathetic support of the members of this society and of the members of the profession in our State.

Now, one other matter. Several years ago, amid the jibes and facetious comments of the press on the matter, a large sum of money was appropriated by the Rockefeller Sanitary Commission for hookworm work in the South. North Carolina received her pro rata share in this work and of that money. The money was expended under the direction of the State Board of Health during the last five years, and I believe I am safe in saying that great good was accomplished thereby—good not

only in directing the attention of the people to intestinal parasites, and in eradicating them thereby, but, in addition, in quickening public sentiment to all forms of sanitation and public and private health work. I may say in passing, as a matter of record, that the work done in North Carolina in the eradication of hookworm disease was so wisely, so carefully, so thoughtfully, so well done by Dr. John A. Ferrell, a member of this body, that when the work was concluded the International Health Commission, which succeeded the Rockefeller Commission, and which has large funds at its disposal for the betterment of health conditions on the habitable globe, so appreciated North Carolina's work and North Carolina's man that Dr. Ferrell was called from North Carolina to the city of New York, and his field of operations was enlarged from North Carolina to that of the globe.

This work did a great deal of good in this State, and I submit for your approval the following resolution of thanks, which I trust you will see fit to adopt:

THE OFFICIAL THANKS OF THE NORTH CAROLINA STATE BOARD OF HEALTH FOR THE ASSISTANCE OF THE ROCKEFELLER SANITARY COMMISSION.

Whereas the five-year period for which the Foundation for the eradication of hookworm disease was established has expired; and whereas the work of the Rockefeller Sanitary Commission terminated in North Carolina May 1, 1915; and whereas the Rockefeller Sanitary Commission has expended the sum of $81,516.23 during the last five years in improving sanitary conditions in North Carolina; and whereas the work of the commission has resulted directly in the examination of 267,999 citizens of this State for hookworm infection, in furnishing treatment to 95,618 infected citizens, in improving 1,796 privies, and, indirectly, in an extensive development of an intelligent appreciation of public health work along all lines of sanitation: Therefore, be it

Resolved, That the North Carolina State Board of Health do hereby officially record their appreciation of the work in this State during the last five years of the Rockefeller Sanitary Commission; and be it further

Resolved, That a copy of these resolutions be sent to the successors of the Rockefeller Sanitary Commission, towit, the International Health Commission, and that these resolutions be given public notice through the Bulletin of the North Carolina State Board of Health.

Upon motion of Dr. Albert Anderson, duly seconded, this resolution of thanks was unanimously adopted.

There being no further business, the Conjoint Session was then adjourned.

ELECTION OF MEMBERS OF BOARD OF EXAMINERS FOR NURSES.

Dr. Thompson Frazer of Asheville was nominated by Dr. L. W. Elias. Nomination seconded by Dr. W. R. Kirk.

Dr. E. Delia Dixon Carroll of Raleigh was nominated by Dr. J. M. Parrott. Nomination seconded by Dr. Albert Anderson.

Dr. Frazer and Dr. Carroll were elected unanimously.

REPORT

OF THE

BOARD OF MEDICAL EXAMINERS

OF THE

STATE OF NORTH CAROLINA

ANNUAL SESSION, GREENSBORO, JUNE 8-11, 1915.

There were:

142 registrations for examinations.
30 failed to pass the examinations.
2 obtained limited licenses.
104 passed successful examinations.
33 obtained licenses by reciprocity.
6 two-year students passed on first two years work.

H. A. ROYSTER, M.D.,
Secretary.

RALEIGH, N. C.

REQUIREMENTS FOR ENTRANCE TO EXAMINATION FOR MEDICAL LICENSE.

An applicant for license to practice medicine in North Carolina must appear before the Board of Medical Examiners in regular session and present a certificate of good moral character, attested by two persons known to the board, a diploma from a medical college in good standing, or a license from some other State, and must deposit $15 with the secretary of the board. He will then be examined upon the following branches of medicine: Anatomy, Physiology, Surgery, Pathology, Hygiene, Chemistry, Pharmacology, Gynecology, Materia Medica, Therapeutics, Obstetrics, Diseases of Children, and the Practice of Medicine. The examinations are written, oral, and practical combined.

He must make an average of 80 per cent upon all the branches, and he must not fall below 35 per cent upon any one branch.

Applicants who are not *bona fide* citizens of North Carolina must satisfy the board that they have an academic education equal to the entrance requirements of the University of North Carolina, and after 1917 this will be required of all persons appearing before the board.

TEMPORARY LICENSE.

An applicant for temporary license must appear before two members of the Board of Medical Examiners and present a certificate of good moral character, a diploma from a medical college in good standing, and must pay a fee of $5. He must then stand a satisfactory examination.

A temporary license continues in force only until the next regular meeting of the board, and is granted but once to the same applicant.

Applicants for temporary license may call upon any two members of the board at their homes at any time in the year, selecting the two most accessible.

REQUIREMENTS FOR RECIPROCITY.

1. Reciprocity is granted only to men of known reputation and ability. Unless the applicant has had five years experience in successful practice in the State in which he then resides, or two years of successful hospital experience, or has filled positions of medical trust accounted by the board as the equal of these, and unless he is a graduate of a high-class medical college and possesses a good preliminary education, his application will not be considered. The burden of proof is upon the applicant to show what his attainments are.

2. He must not have failed before the North Carolina Board.

3. He must present himself in person before the North Carolina Board at its regular session. To this rule no exception is ever made. He must then pay a fee of $50.

4. He must fill out a blank application in regard to his moral character, educational attainments, identity, etc., and file the same with the secretary of the board at least thirty days before the meeting of the board. (Blank applications may be obtained from the secretary upon request.)

5. Reciprocity will be granted to physicians who have been admitted by examination to the United States Public Health Service, the United States Navy or Army, and who have been continuously in service, or have received honorable discharge, and have been in continuous successful practice to the date of application.

In regard to the matter of reciprocity, the State of North Carolina regards the qualifications of the applicant rather than the State from which he comes. In every case it is necessary that the applicant appear in person before the Board of Medical Examiners in regular session, and by this personal interview convince the members of the board that he is a man of intelligence, sobriety, and high personal character. For this reason it is impossible to make a definite promise of reciprocity to any man until he has appeared before the board.

The applicant must also produce papers showing that he has a good preliminary education, is a graduate of a high-grade medical college, and that he has been successful in his medical undertakings since graduation. In addition to the application blank, the applicant must furnish abundant evidence that every statement contained thereon is true. That is, when hospital experience is claimed, it must be accompanied by letters from the proper authorities, showing the time of such service, and certifying that this service was satisfactory. The same requirements are made in regard to other positions of medical trust.

Reciprocal relations have been established with Louisiana, Indiana, and Minnesota on a basis of preliminary education and college rating.

With Maryland, Virginia, and Texas, on a basis of two years hospital work or five years of successful practice.

The North Carolina Board reserves the privilege of rejecting any applicant for reciprocity without question or comment on the part of the applicant.

EXAMINATION PAPERS.

ANATOMY.

By CHARLES T. HARPER, M.D., Wilmington, N. C.

1. Describe the tibia.
2. Describe the nasal fossæ.
3. Describe the hip joint.
4. Give origin, insertion, nerve supply and action of internal oblique muscle.
5. Describe the following nerves: (*a*) phrenic, (*b*) radial.
6. Describe the vertebral artery.
7. Bound the popliteal space and mention its contents.
8. Describe the small intestine, and give nerve supply.
9. Describe the ovaries and give blood supply.
10. Name the structures that would be severed in an amputation at the middle of the humerus.

CHEMISTRY.

By DR. ISAAC M. TAYLOR, Morganton, N. C.

1. What is meant by specific gravity? How is the specific gravity of liquids most easily determined? What is a urinometer, its uses and the meaning of the figures on its graduated stem?
2. What is meant in chemistry by an element? A compound? A mixture? A salt? An alkaloid?
3. What is meant by inorganic chemistry? Organic chemistry?
4. Give chemical names and chemical symbols of sugar of lead; Glauber salts; blue-stone; a salt of mercury; of iron; of magnesium, and of potassium (all medicinal agents).
5. Name two alkaloids in common use in medicine.
6. What is the antidote for carbolic acid? For corrosive sublimate?
7. What is an enzyme? What are the enzymes of the gastric juice and their principal action?
8. What is the difference between alcohol and ether?
9. What are the chlorine salts of mercury; common name; chemical name; chemical formula, and toxicity, each?
10. What is the normal chemical reaction of saliva; gastric juice; pancreatic juice; blood; bile; tears; urine?

PEDIATRICS.

11. Give differential diagnosis between measles and scarlet fever.
12. What are the causes of convulsions in infancy and childhood?
13. What are the early symptoms of scorbutus and rachitis, and in what classes of children should we be on the watch for their development?
14. Causes and treatment of ileo colitis?

PHYSIOLOGY, PATHOLOGY, AND HYGIENE.

By DR. M. L. STEVENS, Asheville, N. C.

1. (*a*) What is the purpose of digestion? (*b*) Name the digestive fluids, the digestive ferments contained in each, and indicate the action of each of these ferments.

2. (*a*) What factors are concerned in producing normal blood pressure? (*b*) What is the normal blood pressure as indicated in millimeters of mercury? (*c*) Name two pathological conditions in which the blood pressure is markedly increased.

3. (*a*) Define reflex action. (*b*) Give an illustration of it as applied to a voluntary muscle. (*c*) To an involuntary muscle. (*d*) To a gland.

4. (*a*) What is the most important end product of the destruction or physiologic oxidation of proteid food in the body? (*b*) In what organ is it produced? (*c*) Where ordinarily found? (*d*) What amount is usually eliminated from the body per day? (*e*) What is the significance of the amount daily excreted?

5. (*a*) Give the origin, number, and function of the leucocytes. (*b*) Name three conditions, physiological or pathological, in which you would find their number increased.

6. (*a*) Define immunity. (*b*) Natural immunity. (*c*) Acquired immunity. (*d*) Mention ways in which immunity may be acquired.

7. Give the pathology of arterio-sclerosis.

8. (*a*) Enumerate all the various ways in which typhoid is ordinarily spread. (*b*) Indicate the measures you would institute for safeguarding others when treating a case of it in your practice.

PRACTICE OF MEDICINE.

By Dr. J. G. Blount, Washington, N. C.

1. Describe in detail the symptomatology of typhoid fever. (*a*) When is perforation most apt to occur? (*b*) Upon the presence of what four symptoms would you rely in advising operation?

2. Name the two varieties of dysentery. (*a*) How would you differentiate? (*b*) In which form is abscess of liver most apt to occur as a complication? (*c*) Give treatment of the two forms.

3. Differentiate between hyper-acidity, gallstones, appendicitis, and renal calculus.

4. Differentiate aortic and mitral valvular disease. (*a*) Where is the aortic regurgitant murmur most distinctly heard? (*b*) Where is the mitral regurgitant murmur most distinctly heard?

5. (*a*) When is the patellor reflex increased? (*b*) When diminished?

6. (*a*) Describe the Argyll Robertson pupil. (*b*) Describe Romberg's Sign. (*c*) Name other symptoms of the disease that these symptoms accompany. (*d*) Give etiology, treatment.

7. What are the early manifestations of hereditary syphilis?

8. What is intestinal stasis? How would you divide its causes? Give examples of each.

9. What is Tinea versicolor? Differentiate between vitelligo, chloasma, and macular syphilodern. How would you treat the disease?

10. Define toxic insanity. What two groups of poisons are responsible for it?

GYNECOLOGY AND OBSTETRICS.

By Dr. J. F. Highsmith, Fayetteville, N. C.

1. Describe the fetal heart sounds, give their rate, and state when and where they are best heard.

2. What are the danger signals of impending eclampsia? (*a*) What is the prognosis? (*b*) Describe an eclamptic attack and give the treatment.

3. Into what stages is labor divided? Define the same, and give a brief description of the management of each stage.

4. Differentiate the male from the female pelvis. What is the importance of these differences in labor?

5. What are the general precautions to be employed in using the forceps? Give the technique of the high forceps operation.

6. What is post-partum hemorrhage? State the causes and symptoms, and give the treatment, including its prophylaxis.

7. Give the symptoms and treatment of mammary abscess.

8. Give the signs of fetal death in utero and the proper treatment of the mother when this condition occurs.

9. What are the causes of hemorrhage from the nonpregnant uterus? Give the treatment for the most usual forms.

10. What are the symptomatic indications for curettage? Give the steps of the operation.

SURGERY.

By Dr. H. A. Royster, Raleigh, N. C.

1. (*a*) What is the surgical significance of leucocytosis? (*b*) Describe the repair of wounds.

2. Give the symptoms, pathology, diagnosis, and treatment of acute osteomyelitis.

3. How would you recognize a fracture of the neck of the femur? How would you manage such a case?

4. What are the common tumors of bone? Give their etiology, pathology, and differential diagnosis.

5. Describe the kinds of goiter and give the indications for surgical interference.

6. Discuss the differential diagnosis between chronic appendicitis, gall-bladder disease, and gastric ulcer.

7. Define empyema, scoliosis, lipoma, anuria, pyemia, cholesystenterostomy, exostosis, gastrectomy, thoracotomy, ranula.

8. How would you arrive at a diagnosis of tuberculosis of the kidney? What is the prognosis and treatment?

9. Give the signs of dislocation: (*a*) of the shoulder; (*b*) of the elbow; and methods of reduction in each.

10. (*a*) How would you distinguish between iritis and glaucoma? (*b*) What are the evidences of adenoids, and the treatment?

PHARMACOLOGY, MATERIA MEDICA, AND THERAPEUTICS.

By Dr. John Q. Myers, Charlotte, N. C.

1. Define: (*a*) Pharmacopœia; (*b*) Posology; (*c*) Clyster; (*d*) Cataplasm; (*e*) Empirical Therapeutics.

2. Give the chemical name of (*a*) White Precipitate; (*b*) Basham's Mixture; (*c*) Salol; (*d*) Fowler's Solution; (*e*) Plaster of Paris; (*f*) Alum; (*g*) Sugar of Lead; (*h*) Soap; (*i*) Synthetical Oil of Wintergreen; (*j*) Blue Ointment.

3. Name the important constituents of the following: (*a*) Gray Powder; (*b*) Dover's Powder; (*c*) Paregoric; (*d*) Carron Oil; (*e*) Blaud's Pills.

4. What drugs would you prescribe in hemorrhage of the lungs, due to mitral stenosis, and why?

5. Give physiological and chemical antidotes for (*a*) Morphine; (*b*) Carbolic Acid; (*c*) Arsenic; (*d*) Strychnine; (*e*) Bichloride of Mercury.

6. Write a prescription for acute iritis. Explain its action in preventing the usual complications.

7. Write prescription for (*a*) Suppository for hemorrhoids; (*b*) An ointment for scabies; (*c*) A lotion for pruritus; (*d*) A liniment for myalgia; (*e*) A paste for acute eczema.

8. Compare the action of strychnine and chloral hydrate on the spinal cord.

9. Name the class of cathartics to which each of the following belongs, and give dose and distinctive action: (*a*) Podophyllin; (*b*) Aloin; (*c*) Oleum tiglii; (*d*) Mild chloride of mercury; (*e*) Magnesium sulphate.

10. Name the important (*a*) Vaccines; (*b*) Antitoxins; (*c*) Serums, now used in preventive medicine.

GRANTED LICENSE, NORTH CAROLINA, 1915, BY EXAMINATION, GREENSBORO, JUNE 8-11.

Name.	Address.	Medical College.	Year.	Preliminary.
Adkins, Merle Theron	Durham	Hopkins	1907	B. S., Beloit.
Armstrong, Leonard P. (col.)	Raleigh	Leonard	1913	Shaw.
Ashe, John Rainey	Charlotte	Columbia, N. Y.	1911	B. S., So. Car.
Baker, Walter English	Arden	Chattanooga	1908	High School.
Baldwin, Oscar Brent (col.)	Wilmington	Leonard	1913	Shaw.
Bell, Carl Wendell	Wakefield	P. and S., Balt.	1914	Wake Forest.
Brackett, William Ernest	Lawndale	Jefferson	1915	Univ. of N. C.
Bradford, Bernard M.	Huntersville	North Carolina	1913	Davidson Coll.
Bridges, William A.	Fairmont	Univ. of Maryland	1915	B. S., Wake Forest.
Bryant, William Henry (col.)	Raleigh	Meharry	1915	B. S., N. C. State Coll.
Bulla, Alex. C.	Ashboro	N. C. Med. Coll.	1915	High School.
Bullard, George F.	Roseboro	N. C. Med. Coll.	1915	High School.
Bullock, John H.	Oxford	Med. Coll. of Va.	1915	Trinity.
Burleson, William B.	Plumtree	Univ. of Maryland	1915	Univ. of N. C.
Cabaniss, Joe T.	Shelby	Columbia, N. Y.	1915	A. M., Wake Forest.
Choate, James W.	Sparta	N. C. Med. Coll.	1915	High School.
Cox, Blaney William	Goldsboro	N. C. Med. Coll.	1915	Univ. of N. C.
Deans, Arthur Wood	Battleboro	Med. Coll. of Va.	1915	Wake Forest.
Dillard, Clarence, Jr. (col.)	Goldsboro	Univ. of W. Tenn.	1912	A. B., Shaw.
Dixon, George G.	Ayden	Med. Coll. of Va.	1915	High School.
Ellington, Amzi J.	Raleigh	Columbia, N. Y.	1915	B.S., Wake Forest.
Falkener, William W.	Warrenton	Univ. of Pa.	1915	A.B., Univ. of N. C.
Finch, Ollie E.	Kittrell	Jefferson	1915	Univ. of N. C.
Flowers, Charles E.	Zebulon	Med. Coll. of Va.	1913	Univ. of N. C.
Furlonge, Charles William (col.)	Smithfield	Leonard	1914	Shaw.
Gallant, Robert M.	Charlotte	N. C. Med. Coll.	1915	Ala. Pres. Coll.
Garvey, Robert R.	Beaver Creek	N. C. Med. Coll.	1915	Appalach. Tr. Sch.
Godwin, Grover C.	Williamston	Med. Coll. of Va.	1915	Oak Ridge Inst.
Grasty, Ernest R. (col.)	Danville, Va.	Leonard Med. Coll.	1914	Westmoreland Inst.
Hagaman, John B.	Hemlock	Lincoln Mem. Univ.	1915	High School.
Hamrick, J. Yates, Jr.	Shelby	Columbia, N. Y.	1915	Wake Forest.
Helms, Thomas L.	Marshville	N. C. Med. Coll.	1914	High School.
Herring, George N.	Turkey	Jefferson	1915	B.S., Wake Forest.
Hill, Robert B.	Statesville	Univ. of Maryland	1915	B.S., Davidson Coll.

GRANTED LICENSE—CONTINUED.

Name.	Address.	Medical College.	Year.	Preliminary.
Horseley, Howard F.	Highlands	Baltimore Med.	1907	High School.
House, Wooster H.	Stokes	Jefferson	1915	Univ. of N. C.
Ingersoll, Louise M.	Asheville	Woman's, Pa.	1914	Vassar and W. Reserve.
Jones, Alex. F.	Ararat	N. C. Med. Coll.	1915	High School.
Jones, Beverly Nichol	Walnut Cove	Med. Coll. of Va.	1915	Univ. of N. C.
Jones, Margaret C.	Goldsboro	Woman's, Pa.	1915	N. C. Normal.
Kennedy, John P.	Due West, S. C.	Jefferson	1915	A. B., Erskine.
King, Max C. (col.)	Raleigh	Meharry	1915	B.A., Shaw.
Lackey, Franklin H.	Fallston	Univ. of Maryland	1915	Univ. of N. C.
Lane, Edgar W.	Hertford	Univ. of Maryland	1915	B.S., Wake Forest.
Lassiter, Chester L.	Smithfield	Jefferson	1915	Univ. of N. C.
Levy, James W. (col.)	Kittrell	Univ. of W. Tenn.	1915	Normal.
Littleton, Henry W.	Albemarle	Jefferson	1915	Ph.B., Univ. of N. C.
Lineberry, William T.	Colerain	Jefferson	1915	B.S., Wake Forest.
Love, William M.	Unionville	N. C. Med. Coll.	1915	High School.
Lowery, John A. B.	Raynham	Univ. of Maryland	1915	High School.
Lubchenko, Nicholas E.	Charlotte	N. C. Med. Coll.	1915	Agr. Coll., Russia.
Martin, James A.	East Bend	Med. Coll. of Va.	1915	Wake Forest.
Matthews, William W.	Stoneville	Chicago Coll. of Med. and Surgery	1913	High School.
Meriwether, Ben M.	Asheville	Univ. of Louisville	1915	High School.
Milliken, James S.	Pittsboro	Jefferson	1915	Trinity and Univ. of N. C.
Mitchener, James S.	Selma	Hopkins	1915	B.S., Davidson Coll.
Moore, Burmah D.	Fayetteville	Med. Coll. of Va.	1915	Mars Hill Coll.
Morrow, Thomas Lacy	Mebane	Univ. of Maryland	1915	Univ. of N. C.
Morton, Joseph X.	South Boston, Va.	N. C. Med. Coll.	1915	High School.
McCuiston, Carl M.	Wallburg	Med. Coll. of Va.	1915	High School.
Parker, Carl P.	Jackson	Med. Coll. of Va.	1915	Univ. of N. C.
Perry, John S. (col.)	Maxton	Univ. of W. Tenn.	1915	A.B., Shaw.
Perry, Herbert G.	Louisburg	P. and S., Balt.	1915	High School.
Peters, William A.	Emporia, Va.	Med. Coll. of Va.	1915	Richmond Coll.
Porter, John E.	Greensboro	Med. Coll. of Va.	1915	High School.
Pressly, John M.	Lincolnton	N. C. Med. Coll.	1915	11th grade.
Price, William D. (col.)	Salisbury	Leonard Med.	1913	Livingstone Coll.
Procter, Ivan M., Jr.	Raleigh	Univ. of Pa.	1915	Univ. of N. C.

Ray, Hickman	Raleigh	Univ. of Maryland	1915	Univ. of N. C.
Reaves, Robert G.	Greenville, Tenn.	Univ. of Va.	1915	A.B., Tusculum.
Rhyne, Samuel C.	Charlotte	N. C. Med. Coll.	1915	Davidson Coll.
Roberson, George B.	Greensboro	S. C. Med. Coll.	1915	Guilford Coll.
Robinson, John D.	Ivanhoe	Univ. of Maryland	1915	A.B., Davidson Coll.
Ruark, William T.	Southport	Univ. of Maryland	1915	Trinity Coll.
Sample, Robert C.	Hendersonville	Univ. of Pa.	1915	B.S., Davidson Coll.
Scott, Egbert T. (col.)	Wilmington	Leonard Med.	1913	A.B., Biddle Univ.
Sessoms, Edwin T.	Roseboro	Med. Coll. of Va.	1915	High School.
Shreve, June Roy	Reidsville	N. C. Med. Coll.	1915	Whitsett Inst.
Shugart, Floyd C.	Elkin	Columbia, N. Y.	1915	B.S., Wake Forest.
Simmons, James S.	Graham	Univ. of Pa.	1915	B.S., Davidson Coll.
Simpson, Hannibal N., Jr.	Stoneville	Chicago Coll. of Med. and Surgery	1912	High School.
Smith, J. Alex.	Lexington	N. C. Med. Coll.	1915	Catawba Coll.
Stockdon, Walter I.	High Falls	P. and S., Balt.	1915	Univ. of N. C.
Stone, Grady E.	King	N. C. Med. Coll.	1915	High School.
Stouffer, John F.	Ashland	Medico-Chirur.	1915	Univ. of Va.
Sturgis, Samuel B.	Philadelphia	Univ. of Pa.	1914	Havenford Coll.
Summey, Thomas J.	Brevard	Jefferson	1915	Trinity.
Sumner, Roy DeW.	Fletcher	Medico-Chirur.	1915	Univ. of N. C.
Taylor, Frank V.	City	N. C. Med. Coll.	1915	High School.
Thomas, Julius G.	Greensboro	Med. Coll. of Va.	1915	High School.
Thompson, Sanford W., Jr.	Sanatorium	Med. Coll. of Va.	1913	Trinity.
Timberlake, Claude V.	Youngsville	Jefferson Med.	1915	Wake Forest.
Toney, Ellis E. (col.)	Raleigh	Meharry	1915	A.B., Shaw.
Triplett, William R.	Purlear	N. C. Med. Coll.	1914	High School.
Tucker, Adam R.	Raleigh	So. Coll. of Med. and Surgery	1912	B.S.,
Vaughan, Joseph C.	Ahoskie	Med. Coll. of Va.	1915	Oak Ridge Inst.
Watkins, George T., Jr.	Goldsboro	Jefferson	1915	B.A., Wake Forest.
Willis, William M.	Morehead City	Med. Coll. of Va.	1914	Wake Forest.
Williams, Louis H.	Faison	Johns Hopkins	1915	A.B., Univ. of N. C.
Williams, Robert C.	Rose Hill	Univ. of Maryland	1912	Univ. of N. C.
Wilson, Frank W.	Greenville	Univ. of Maryland	1914	Univ. of N. C.
Wilson, Thomas H.	Newton Grove	Med. Coll. of Va.	1915	Trinity Coll.
Wingate, George C.	Charlotte	N. C. Med. Coll.	1914	So. Indus. Inst.
Woodard, Grover B.	Kenly	Med. Coll. of Va.	1915	High School.

GRANTED LICENSES, JUNE, 1915, BY RECIPROCITY.

Name.	Address.	Medical College.	Year.	State.
Allgood, Reese A.	Fayetteville	Univ. of Maryland	1912	South Carolina.
Bardin, Zophar M.	Wananish	S. C. Med. Coll.	1905	South Carolina.
Bell, John C.	Roda, Va.	P. and S., Balt.	1910	Virginia.
Breeding, Earle G.	Rocky Mount	Univ. of Maryland	1913	Maryland.
Bulluck, Jesse B.	Aynor, S. C.	Univ. of Nashville	1893	South Carolina.
Carrigan, William A.	Hendersonville	Univ. of Maryland	1902	South Carolina.
Codington, H. A.	Wilmington	Univ. of Maryland	1911	Maryland.
Crawford, James M.	Asheville	Atlanta Med.	1884	Georgia.
Duncan, Jennie A.	Raleigh	Illinois Univ.	1909	Illinois.
Edgerton, Milton T.	Greenville	Univ. Maryland	1912	Maryland.
Fortune, R. E.	Damascus, Va.	Univ. of Va.	1898	Virginia.
Gamble, J. F.	Elgin, Okla.	Univ. of Tenn.	1903	Oklahoma.
Gruver, C. D.	Rosman	Univ. of Maryland	1902	Pennsylvania.
Hardin, Eugene R.	Clinton	Univ. of Georgia	1911	Georgia.
Lawson, R. B.	Chapel Hill	Univ. of Virginia	1903	Virginia.
Lee, Joseph E.	Cleveland	Univ. of S. C.	1886	South Carolina.
Miller, John F.	Ashboro	Medico-Chirur.	1906	South Carolina.
Morgan, Ernest L.	Canton	Johns Hopkins	1912	Maryland.
McDaniel, Lawrence E.	Lasker	Univ. of Maryland	1911	South Carolina.
Neal, M. Pinson	Asheville	Univ. of Va.	1912	Virginia.
Parker, Horace P.	Candler	Univ. of Colorado	1906	Colorado.
Perdue, William W.	Asheville	Univ. of Alabama	1908	Alabama.
Prince, Ephraim L.	Morganton, Ga.	Vanderbilt Univ.	1891	Georgia.
Ray, John E., Jr.	Raleigh	Cornell	1912	New York.
Ruff, Frank R.	Duke	Univ. of Va.	1913	Virginia.
Scruggs, William H.	Black Mountain	Univ. of Maryland	1913	Maryland.
Sidbury, J. B.	Wilmington	Columbia, N. Y.	1912	New York.
Speight, James A.	Nashville	Univ. of Louisiana	1914	Louisiana.
Steele, Martin W.	Cary	Ky. Coll. of Med.	1905	Kentucky.
Stirewalt, Neal S.	Greensboro	Univ. of Maryland	1909	South Carolina.
Thompson, E. B. (col.)	Asheville	Howard Univ.	1909	South Carolina.
Uhls, Russell T.	Franklinton	Univ. of Kansas City	1911	Missouri.
Wilmerding, William E.	Selma	Sewanee, Tenn.	1900	Georgia.

LIMITED LICENSES GRANTED, JUNE, 1915.

Guffey, George W.	Lee, N. C.	To practice in Madison and Haywood counties.
Higgins, T H.	Traphill, N. C.	To practice in Traphill, Rock Creek, Walnut Grove, Mulberry, and Union townships in Wilkes County, and that part of Surry County north of Mount Airy Road.

TWO-YEAR STUDENTS, JUNE, 1915. PASSED ON FIRST TWO YEARS WORK.

Brockman, Harry L.	Greensboro, N. C.	Univ. of N. C.
Jennings, O. H.	Poors Knob, N. C.	Univ. of N. C. and Jefferson.
Kirkpatrick, C. F.	Clyde, N. C.	Univ. of N. C.
Kluttz, DeWitt	Chester, S. C.	Univ. of N. C.
Latham, Roscoe	Belhaven, N. C.	Univ. of N. C.
Wolfe, Hugh C.	Greensboro, N. C.	Med. Coll. of Va.

ALPHABETICAL LIST OF MEMBERS OF MEDICAL SOCIETY, WITH POST-OFFICE ADDRESS.

Name.	*Address.*
Abernethy, C. O.	Raleigh
Abernethy, E. A.	Chapel Hill
Abernethy, H. N.	Denver
Abernethy, J. S.	Charlotte, R. F. D. 6
Abernethy, M. B.	Reidsville
Absher, D. C.	Henderson
Achorn, J. W.	Pine Bluff
Adams, C. A.	Durham
Adams, C. E.	Gastonia
Adams, J. L.	Asheville
Adams, M. R.	Statesville
Adams, N. B.	Murphy
Adkins, E. H.	Rosemary
Alexander, A. L.	Charlotte
Alexander, J. R.	Charlotte
Alford, A. E. B.	Greensboro
Allan, William	Charlotte
Allen, B. G.	Henderson
Allen, J. A.	New London
Allen, R. L.	Waynesville
Allhand, J. M.	Cliffside
Ambler, C. P.	Asheville
Anders, M. G.	Gastonia
Anderson, Albert	Raleigh
Anderson, C. A.	Burlington
Anderson, J. A.	McAdenville
Anderson, J. G.	Asheville
Anderson, J. N.	Albemarle
Anderson, J. R.	Morganton
Anderson, P. V.	Richmond, Va.
Anderson, T. E. (Hon.)	Statesville
Anderson, W. H.	Wilson
Anderson, W. S.	Wilson
Andrews, R. M.	Union Mills, R. F. D.
Andrews, V. L.	Mount Gilead
Anthony, J. E.	Kings Mountain
Archer, I. J.	Black Mountain
Armfield, Romulus	Marshville
Armstrong, C. W.	Troy
Arnold, L. J.	Lillington
Asbury, F. E. (Hon.)	Worthville
Ashby, T. B.	Mount Airy
Ashcraft, J. E.	Monroe
Ashe, J. R.	Charlotte
Ashworth, B. L.	Marion
Ashworth, W. C.	Greensboro
Attmore, G. S.	Stonewall
Austin, F. DeC.	Charlotte
Austin, J. A.	Charlotte
Austin, J. W.	High Point
Averitt, K. G.	Cedar Creek
Aydlett, H. T.	Elizabeth City
Aydlett, J. P.	Earl
Bahnson, H. T. (Hon.)	Winston-Salem
Baird, C. A.	Mount Airy
Baird, J. H.	Mars Hill
Baird, J. W.	Mars Hill
Baker, J. M. (Hon.)	Tarboro
Ball, M. W.	Newport
Ballard, A. M.	Asheville
Bandy, W. G.	Maiden
Banner, C. W.	Greensboro
Barbee, G. S.	Wendell
Barefoot, J. J.	Graham
Barefoot, M. L.	Dunn
Barnes, B. F.	Elm City
Barr, F. E.	Townsville
Barron, A. A.	Charlotte
Basnight, T. G.	Stokes
Bass, H. H.	Henderson
Bass, S. P.	Tarboro
Battle, G. C.	Rocky Mount
Battle, J. P.	Rocky Mount
Battle, J. T. J.	Greensboro
Battle, K. P., Jr. (Hon.)	Raleigh
Battle, S. W.	Asheville
Baynes, R. H.	Hurdle Mills
Baynes, R. S.	Hurdle Mills
Beall, L. G.	Greensboro
Beall, W. P. (Hon.)	Greensboro
Beam, R. S.	Lumberton
Bell, A. E.	Mooresville
Bellamy, R. H.	Wilmington
Bellamy W. J. H. (Hon.)	Wilmington
Best, H. B.	Wilson
Biggs, M. H.	Rutherfordton
Bingham, G. P.	Lenoir
Bitting, N. D.	Durham
Black, J. C.	Harrisburg

Name.	*Address.*
Blackburn, T. C.	Hickory
Blair, A. McN.	Southern Pines
Blair, J. M.	Monroe
Blair, M. P.	Marshville
Blalock, B. F.	Norwood
Blalock, N. M.	Gully's Mills
Blasely, E. B.	Fountain
Blount, F. H.	Swansboro
Blount, J. G.	Washington
Boaz, T. A.	Stoneville
Bobbitt, E. H.	Louisburg
Boddie, N. P. (Hon.)	Durham
Boger, D. T.	Unionville
Boice, E. S.	Rocky Mount
Bolles, C. P., Jr.	Wilmington
Bolton, Mahlon	Rich Square
Bonner, H. M.	New Bern
Bonner, K. P. B.	Morehead City
Booker, L. S.	Durham
Boone, W. H.	Durham
Booth, S. D.	Oxford
Booth, T. L.	Oxford
Borneman, J. H.	Wilmington
Bostic, W. C.	Forest City
Bowers, M. A.	Thomasville
Bowling, E. H.	Durham
Bowman, E. H.	Biscoe
Bowman, H. P.	Greensboro
Boyden, W. C.	China Grove
Boyette, E. C.	Charlotte
Boyles, A. C.	Durham
Boyles, J. H.	Greensboro
Braddy, W. H.	Greensboro
Bradsher, W. A.	Roxboro
Brantley, H.	Spring Hope
Brawley, M. H.	Salisbury
Brawley, R. V.	Salisbury
Brenizer, A. G.	Charlotte
Briggs, H. H.	Asheville
Brittle, P. C.	Conway
Brothers, J. E.	Goldsboro
Brown, J. S.	Hendersonville
Brownson, W. C.	Asheville
Brooks, B. U.	Durham
Brookshire, H. G.	Leicester
Brown, G. W.	Raeford
Brown, J. P.	Fairmont
Bryson, E. J.	Cullowhee
Buchanan, C. L.	Plumtree
Buchanan, E. J.	Lexington
Buchanan, S. E.	Concord
Buckner, J. M.	Swannanoa
Buckner, R. G.	Asheville
Buffalo, J. S.	Garner
Bullitt, J. B.	Chapel Hill
Bullock, W. B.	Hester
Bullock, T. C.	Autryville
Bulluck, E. S.	Wilmington
Bunn, J. J.	Mount Pleasant
Burbage, T. I.	Como
Burnett, J. E.	Mars Hill
Burrus, J. T.	High Point
Burt, S. P.	Louisburg
Burtt, B. W.	New Hill
Bynum, John	Winston-Salem
Bynum, W. H.	Germanton
Caddell, S. W.	Ramseur
Caldwell, D. G. (Hon.)	Concord
Caldwell, J. H.	Charlotte
Caldwell, M. M.	Wilmington
Caldwell, W. H.	Snowden
Callaway, A. W.	Asheville
Campbell, A.	Statesville
Campbell, A. C.	Raleigh
Campbell, J. I.	Norwood
Campbell, J. R.	Newton
Candler, C. Z.	Sylva
Carlton, R. L.	Kernersville
Carpenter, F. A.	Statesville
Carroll, E. D. D.	Raleigh
Carroll, J. L.	Hookerton
Carroll, J. W.	Wallace
Carroll, R. S.	Asheville
Carstarphen, W. F.	Wake Forest
Carter, G. H.	King's Creek
Carter, H. W.	Washington
Carter, M. W.	Washington
Cason, H. M. S.	Edenton
Cathell, J. E.	Linwood, R. F. D. 1
Caton, G. A.	New Bern
Cauble, H. H.	Kannapolis
Cauthen, R. S. (deceased)	Charlotte
Caveness, Z. M.	Raleigh
Champion, C. O.	Mooresboro
Chaney, T. M.	Winston
Chapin, H. T.	Pittsboro
Chapin, W. B.	Youngsville
Cheatham, Archibald	Durham
Cheatham, Goode	Brevard
Cheek, C. E.	Fuquay Springs
Cheeseborough, T. P.	Asheville
Choate, B. O.	Sparta
Choate, G. W.	Rockwell
Choate, J. W.	Ronda
Clark, E. S.	Clarkton

Name.	*Address.*
Clark, G. L.	Clarkton
Clemenger, F. J.	Asheville
Cliff, B. F.	Flat Rock
Clifford, J. S.	Charlotte
Clingman, J. J.	Cana
Clodfelter, C. M.	Lexington
Cocke, C. H.	Asheville
Cocke, J. E.	Asheville
Coe, S. S.	High Point
Coffey, L. H.	Valmead
Cohn, B. W.	South Mills
Coiner, N. L.	Durham
Colby, C. Dew.	Asheville
Cole, W. F.	Greensboro
Coleman, G. S.	Kenly
Cooke, Q. H.	Woodland
Cooper, G. M.	Raleigh
Coppedge, T. O.	Raleigh
Corpening, O. J.	Granite Falls
Costello, M. J.	Asheville
Costner, G. H.	Lincolnton
Cotton, C. E.	Black Mountain
Council, J. B.	Salisbury
Cowell, Will	Shawboro
Cox, B. F.	Palmerville
Cox, E. L.	Jacksonville
Craig, S. D.	Winston-Salem
Cranford, J. F.	Hendersonville
Cranmer, J. B.	Wilmington
Craven, F. C.	Ramseur
Craven, W. W.	Huntersville
Crocker, W. D.	Warsaw
Cromartie, R. S.	Gerland
Croom, A. B.	Maxton
Crouch, T. D.	Stony Point
Crowell, A. J.	Charlotte
Crowell, L. A.	Lincolnton
Crowell, S. M.	Charlotte
Crump, W. L.	Salisbury
Crumpler, Paul	Clinton
Cummins, M. P.	Reidsville
Currie, E. W.	Salisbury
Cutchin, Henry	Whitakers
Daligny, Charles	Troy
Dalton, D. N.	Winston
Dalton, W. N.	Winston
Dameron, E. Lee	Star
Daniels, R. L.	Swansboro
Davidson, J. E. S.	Charlotte
Davis, A. P.	Winston
Davis, F. M.	Canton
Davis, J. C.	Candler
Davis, J. F.	Glendon
Davis, J. W.	Statesville
Davis, T. W.	Winston-Salem
Davis, W. W.	Belmont
Dean, T. J.	Nashville
DeArmon, J. McC.	Charlotte
Dees, D. A.	Bayboro
Dees, R. E.	Greensboro
Dees, R. O.	Greensboro
Denning, O. L.	Dunn
Denny, W. L. (Hon.)	Pink Hill
Denson, H. A.	Bennett
Dew, S. B.	Bailey
Dick, J. V.	Gibsonville
Dickie, H. G.	Town Creek
Dickinson, E. T.	Wilson
Dickson, A. P.	Raeford
Dillard, Richard (Hon.)	Edenton
Dixon, D. R.	Rocky Mount
Dixon, Guy E.	Hendersonville
Dixon, W. H.	Ayden
Dodson, H. H.	Greensboro
Dosher, J. A.	Southport
Dowd, J. A.	Biscoe
Dowdy, G. E.	Winston
Drafts, A. B.	Hendersonville
Duffy, Lewiston	New Bern
Duffy, R. N.	New Bern
Duncan, C. L.	Beaufort
Duncan, G. F.	High Point
Dunlap, L. V.	Albemarle
Dunn, W. L.	Asheville
Eagles, C. S.	Saratoga
Earnhardt, J. M.	Mount Pleasant
Eason, Oscar	Princeton
Eckel, O. F.	Asheville
Eddleman, H. M.	Gastonia
Edgerton, J. L.	Hendersonville
Edgerton, M. T., Jr.	Greenville
Edwards, A. D.	Winston
Edwards, B. O.	Landis
Edwards, G. C.	Hookerton
Edwards, J. D.	Siler City
Elias, L. W.	Asheville
Ellen, C. J.	Battleboro, R. F. D.
Ellington, J. H.	Sandy Ridge
Ellington, Samuel	Wentworth
Ellis, R. C	Shelby
English, E. S.	Brevard
Erwin, E. W.	Laurinburg
Eubanks, J. B.	Monroe
Evans, L. B.	Windsor

Name.	*Address.*
Everett, A. C.	Rockingham
Everington, G. D.	Laurinburg
Faison, I. W. (Hon.)	Charlotte
Faison, Yates	Charlotte
Farthing, L. E.	Pittsboro
Fassett, B. W.	Durham
Fearing, Isaiah	Elizabeth City
Fearing, Zenas	Elizabeth City
Fearington, J. P.	Winston
Felts, R. L.	Durham
Fenner, E. F.	Henderson
Ferebee, C. G.	South Mills
Ferebee, E. B.	Raleigh
Ferrell, John A.	61 B'dway N. Y. City
Fetner, L. M.	Charlotte
Fields, B. T.	Greensboro
Fields, R. M.	Goldston
Finney, J. R.	Boonville
Fitzgerald, J. Y.	Indian Trail
Flack, R. E.	Spray
Fleming, M. J.	Hamilton
Fletcher, M. H. (Hon.)	Asheville
Flint, S. S.	Rural Hall
Flippin, J. M.	Mount Airy
Flippin, R. E. L.	Pilot Mountain
Flippin, S. T.	Siloam
Flowers, B. G.	Granite Falls
Flowers, C. A.	Columbia
Flowers, G. E.	Hickory
Flows, J. W.	Kannapolis
Flows, M. A.	Kannapolis
Floyd, A. G.	Fair Bluff
Floyd, R. P.	Louisburg, R. F. D. 1
Foil, M. A.	Mount Pleasant
Fortune, A. F.	Greensboro
Foscue, J. E.	Jamestown
Fowlkes, J. I.	Hamlet
Fox, D. L.	Randleman
Fox, M. F. (Hon.)	Guilford College
Fox, T. I.	Franklinville
Frazer, H. T.	Asheville
Frisbee, T. J.	Barnard
Frizzelle, M. T.	Ayden
Furman, W. H.	Henderson
Galloway, W. C. (Hon.)	Wilmington
Gamble, J. R.	High Shoals
Gardener, G. D.	Asheville
Garren, R. H.	Bessemer City
Garrenton, C.	Bethel
Garrett, F. B.	Rockingham
Garrett, F. J.	Rockingham
Garrison, D. A.	Gastonia
Gayle, E. M.	Morganton
Gentry G. W.	Timberlake
George, D. S.	Marshallburg
Gibbin, R. L.	Charlotte
Gibbs, N. M.	New Bern
Gibson, J. S.	Gibson
Gibson, L. A.	Statesville
Gibson, M. R.	Raleigh
Gill, J. N.	Weaverville
Gill, R. J.	Henderson
Gilmer, C. S.	Greensboro, R. F. D. 6
Gilmer, B. H.	Plymouth
Gilmore, W. D.	Mooresville
Ginn, T. L.	Goldsboro
Glenn, E. B.	Asheville
Glenn, H. F.	Gastonia
Glenn, L. N.	Gastonia
Goodman, A. B.	Lenoir
Gouger, G. J.	Concord, R. F. D.
Gold, C. F.	Ellenboro
Gold, T. R.	Lawndale
Goley, W. R.	Graham
Goley, W. R.	Shallotte
Goodman, E. G.	Lanvale
Goodwin, A. W.	Raleigh
Gordon, J. R.	Raleigh
Gove, A. M.	Greensboro
Grady, J. C.	Kenly
Grady, L. V.	Taylors
Graham, B. R.	Wallace
Graham, G. A.	Raeford
Graham, Joseph	Durham
Graham, W. A.	Charlotte
Grantham, W. L.	Lumberton
Gray, E. P.	Winston-Salem
Grayson, Charles S.	High Point
Green, J. C.	Greenville
Green, T. M.	Wilmington
Greene, A. W.	Ahoskie
Greene, J. B.	Asheville
Greene, W. W.	Tarboro
Greenwood, B. H.	Waynesville
Greenwood, S. E.	Fletcher, R. F. D.
Grier, S. A.	Harrisburg
Griffin, C. O.	Bethel
Griffin, J. A. (Hon.)	Clayton
Griffin, T. A.	Clayton
Griffin, W. R.	Morganton
Griffith, F. W.	Asheville
Griggs, W. T.	Lawndale
Griggs, W. T.	Poplar Branch
Grimes, W. S.	Winston-Salem

Name.	*Address.*
Guin, L. E.	Waxhaw
Guin, J. L.	Wilmington
Hackney, B. H.	Bynum
Halford, J. W.	Lillington
Hall, E. A.	Statesville
Hall, J. C.	Albemarle
Hall, J. K.	Richmond, Va.
Hall, Wright (Hon.)	Wilmington
Halsey, B. F.	Roper
Hammock, J. C.	Walkertown
Hammond, A. F.	Pollocksville
Hamrick, T. G.	Shelby
Hardee, P. R.	Stem
Harding, S. A.	Yadkinville
Harding, T. R.	Yadkinville
Hardison, M. H.	Creswell
Hardy, I. M.	Washington
Hargrove, R. H. (Hon.)	Robersonville
Hargrove, W. F.	Kinston
Harper, C. T.	Wilmington
Harper, J. H.	Snow Hill
Harrell, L. B.	Caroleen
Harrell, S. N.	Tarboro
Harris, A. H.	Wilmington
Harris, E. B.	Rutherfordton
Harris, F. R.	Henderson
Harris, I. A. (Hon.)	Alexander
Harris, J. H.	Franklinton
Harrison, A. S.	Enfield
Harrison, Edmund	Greensboro
Harrison, J. S.	Elm City
Hartsell, F. E.	Big Lick
Hasell, J. L.	Creswell
Hathcock, T. A.	Norwood
Hays, B. K.	Oxford
Hays, R. B.	Fayetteville
Haywood, Hubert	Raleigh
Haywood, Hubert B., Jr.	Raleigh
Hayworth, C. A.	Coleridge
Headen, W. E.	Morehead City
Heighway, S. C.	Murphy
Heilig, H. G.	Salisbury
Henderson, S. M.	Charlotte, R. F. D.
Henderson, T. B.	Henderson
Henderson, R. B.	Franklinton
Hennessee, E. A.	Glen Alpine
Herbert, F. L.	Andrews
Herbert, W. P.	Asheville
Herman, F. L.	Conover
Herring, B. S.	Wilson
Herron, A. M.	Charlotte
Hiatt, H. B.	High Point
Hicks, C. S.	Durham
Hicks, I. F.	Dunn
Hicks, Romeo	Henrietta, R. F. D.
Hicks, W. N.	Durham
Highsmith, Charles	Dunn
Highsmith, J. F.	Fayetteville
Highsmith, Seavy	Fayetteville
Hill, C. D.	Durham
Hill, D. J.	Lexington
Hill, J. N.	Murphy
Hill, L. H. (Hon.)	Germanton
Hill, W. J.	Albemarle
Hilton, J. J.	Greensboro
Hinnant, Melford	Micro
Hocutt, B. A.	Clayton
Hodges, J. M.	Cranberry
Hodgin, H. H.	Red Springs
Hoggard, W. A.	Woodville
Hollingsworth, E. M.	Mount Airy
Hollingsworth, E. T.	Ivanhoe
Hollingsworth, R. E.	Mount Airy
Holloway, O. W.	North Side
Holloway, R. L.	West Durham
Hollyday, W. M.	Asheville
Holmes, A. B.	Council
Holmes, F. H. (deceased)	Clinton
Holt, T. J.	Wise
Holt, W. P.	Duke
Holt, W. T.	McLeansville
Honnett, J. H.	Wilmington
Honnicutt, W. J.	Asheville
Hooks, T.	Smithfield
Hooper, D. D.	Sylva
Hoover, C. H.	Crouse
Hoover, H. R.	Wilson
Horton, M. C.	Raleigh
Horton, W. C.	Raleigh
Houck, Albert	Morganton
Housacker, Charles G.	Hickory
Houser, E. A.	Fallston
Hovis, L. W.	Charlotte
Howe, W. H.	Hendersonville
Howell, W. L.	Ellerbe, R. F. D.
Hoyle, H. B.	Biscoe
Hubbard, C. C.	Farmer
Hudson, W. L.	Dunn
Hunt, C. W.	Brevard
Hunt, J. F.	Casar
Hunter, E. R.	Charlotte
Hunter, H. H.	Pinetown
Hunter, J. V.	Ashboro
Hunter, L. W.	Charlotte
Hunter, Myers	Charlotte

Name.	*Address.*
Hunter, M. C.	Huntersville
Hunter, N. C.	Rockingham
Hurdle, S. W.	Lewisville
Huston, J. W.	Asheville
Hutchinson, S. S.	Hope Mills
Hyatt, F. C.	Greensboro
Hyatt, H. O.	Kinston
Ingram, C. B.	Mount Gilead
Irvin, S. S.	Mount Airy
Irwin, H. C.	Roanoke Rapids
Irwin, J. R. (Hon.)	Charlotte
Jacocks, W. P.	Kingstown, St. Vincent, B. W. I.
Jackson, C. C.	Yeatesville
Jackson, W. L.	Trinity
James, W. D.	Hamlet
James, W. D.	Laurinburg
Jarboe, Parran	Greensboro
Jenkins, C. L.	Raleigh
Jenkins, J. H.	Gastonia
Jerome, J. R.	Wingate
Jett, E. S.	Reidsville
Jett, S. G.	Reidsville
Jewett, R. D.	Winston
John, Peter	Laurinburg
Johnson, Alice E.	Asheville
Johnson, B. C.	Bunn
Johnson, N. M. (Hon.)	Durham
Johnson, R. W.	Apex
Johnson, T. L.	Lumberton
Johnson, W. A.	Reidsville
Johnson, W. M.	Winston-Salem
Johnston, W. W.	Manteo
Jonas, J. F.	Marion
Jones, A. G.	Walnut Cove
Jones, C. M.	Grimesland
Jones, R. Duval	New Bern
Jones, W. M.	Greensboro
Jordan, A. C.	Durham
Jordan, C. S.	Asheville
Jordan, G. E. (deceased)	Greensboro
Jordan, T. M.	Raleigh
Jordan, W. S.	Fayetteville
Joyner, T. O.	Severn
Juat, Francis	Raeford
Judd, E. C.	Raleigh
Judd, J. M.	Cardenas
Julian, C. A.	Thomasville
Jurney, P. C.	Turnersburg
Justice, G. B.	Marion
Kapp, H. H.	Winston
Kellum, W. D.	Ahoskie, R. F. D. 3
Kendrick, R. L.	Elizabeth City
Kent, A. A.	Lenoir
Kerns, T. C.	Durham
Kerr, J. D., Jr.	Clinton
Kibler, W. H.	Nashville
Killian, P. B.	Hayesville
Killian, R. B.	Lincolnton
King, M. N.	Durham
King, P. M.	Charlotte
King, R. M.	Concord
Kinsman, H. F.	Hamlet
Kirby, G. S.	Marion
Kirk, W. R.	Hendersonville
Kizer, W. C.	Reepsville
Knight, J. B. H.	Williamston
Knight, W. P.	Greensboro
Knox, A. W.	Raleigh
Koonce, S. E.	Wilmington
Kornegay, L. W.	Rocky Mount
Kornegay, George E.	Kinston
Kreasman, H. F.	Hamlet
Kreiger, O. R.	King
Lafferty, J. S.	Concord
Lafferty, R. H.	Charlotte
Lamm, I. W.	Lucama
Lane, John L.	Rocky Mount
Lapham, Mary E.	Highlands
Lassiter, E. W.	Rich Square
Laster, P. D.	Moncure, R. F. D. 1
Laton, J. F.	Albemarle
Lattimore, E. B.	Shelby
Laughinghouse, C. O'H.	Greenville
Lawrence, C. S.	Winston-Salem
Leak, J. J.	Dan River
Ledbetter, A. E.	Greensboro
Ledbetter, J. M.	Rockingham
Lee, S. P. J.	Dunn
Lee, L. V.	Lattimore
Lepper, D. H.	Hiddenite
Leinbach, R. F.	Charlotte
Leonard, G. F.	Washington, D. C.
Lewis, G. W.	Wilson
Lewis, H. W.	Jackson
Lewis, R. H. (Hon.)	Raleigh
Liles, N. P.	Elizabethtown
Lilly, J. M.	Fayetteville
Linville, A. Y.	Winston-Salem
Lister, J. L.	Jackson
Little, E. E.	Statesville, R. F. D. 6
Livingston, E.	Gibson

Name.	*Address.*
Lloyd, B. B.	Venable
Lockett, E. A.	Winston-Salem
Long, F. Y.	Catawba
Long, B. L.	Glen Alpine
Long, B. L.	Hamilton
Long, E. M.	Oak City
Long, Glenn	Catawba
Long, H. F.	Statesville
Long, J. W. (Hon.)	Greensboro
Long, T. W.	Newton
Long, T. W. M.	Roanoke Rapids
Long, V. McK.	Winston
Long, W. T.	Roxboro
Lott, H. S.	Winston-Salem
Love, B. E.	Roxboro
Love, W. J. (Hon.)	Wilmington
Lovelace, T. B.	Henrietta, R. F. D.
Lovill, R. J.	Dobson
Lowery, J. R.	Raleigh
Lucas, W. H. G.	White Oak
Lyday, A. E.	Penrose
Lyday, C. E.	Rosman
Lyle, S. H.	Franklin
Lynch, J. M.	Asheville
Lyon, E. H.	Bahama
MacConnell, J. W.	Davidson
MacIntosh, L. C.	Henderson
MacKethan, D. G.	Fayetteville
MacKethan, J. A.	Fayetteville
MacNider, W. DeB.	Chapel Hill
Macon, G. H.	Warrenton
Macon, P. J.	Warrenton
Magruder, L. F.	Albemarle
Mallett, E. P.	Hendersonville
Malloy, S. A.	Yanceyville
Malone, J. E.	Louisburg
Manness, J. M.	Roberdell
Mann, I. T.	High Point
Mann, Stuart	Moyock
Manning, I. H.	Chapel Hill
Manning, J. M.	Durham
Marr, M. W.	Pinehurst
Marriner, N. B.	Belhaven
Marriott, H. B.	Battleboro
Martin, J. H.	Rockford, R. F. D. 1
Martin, S. L.	Leaksville
Matheson, J. P.	Charlotte
Matheson, R. C.	Madison
Matthews, J. O.	Clinton
Matthews, J. C.	Charlotte
Matthews, J. H.	Vass
Matthews, M. L.	Cameron
Matthews, T. A.	Castalia
Matthews, W. S.	Cleveland Mill
Maxwell, C. S.	Beaufort
Maxwell, H. B.	Whiteville
Maynard, J. D.	Knott's Island
McAnally, W. J.	High Point
McBrayer, L. B.	Sanatorium
McCain, H. W.	High Point
McCampbell, John	Morganton
McCanless, W. L.	Danbury
McCanless, W. V.	Danbury
McCombs, C. J.	Gastonia
McConnell, J. W.	Davidson
McCotter, S. E.	Bayboro
McCoy, T. M.	Mount Holly
McCracken, C. M.	Fairview
McCracken, J. R.	Waynesville
McCullers, J. J. L.	McCullers
McDaniel, C. B.	Rutherfordton
McDonald, A. A.	Jackson Springs
McDonald, A. D. (Hon.)	Wilmington
McFayden, P. R.	Concord
McGee, J. W., Jr.	Raleigh
McGehee, J. W.	Reidsville
McGougan, J. V.	Fayetteville
McIntosh, D. M.	Old Fort
McIver, E. M.	Jonesboro
McIver, Lynn	Sanford
McKaig, F. T.	Andrews
McKay, H. W.	Charlotte
McKay, J. F.	Buie's Creek
McKee, John S.	Raleigh
McLaughlin, C. S.	Charlotte
McLaughlin, J. E.	Statesville
McLean, Allen	Wagram
McLean, J. W.	Godwin
McLean, Peter	Laurinburg
McLean, R. H.	Dunn, R. F. D. 6
McLemore, G. A.	Clayton
McLeod, A. H.	Aberdeen
McLeod, G. M.	Carthage
McMahan, J. W.	Crestmont
McManas, W. L.	Bonlee
McMillan, B. F.	Red Springs
McMillan, J. L.	Red Springs
McMillan, R. D.	Red Springs
McMillan, W. D. (Hon.)	Wilmington
McMillan, J. M.	Hemp
McMullan, J. H.	Edenton
McMullan, Oscar	Elizabeth City
McNairy, C. B.	Lenoir
McNeill, J. W. (Hon.)	Fayetteville
McPhail, L. D.	Rockingham

Name.	*Address.*
McPherson, C. W.	Burlington
McPherson, S. D.	Durham
McPhaul, W. A.	Lumberton
Meadows, E. B.	Oxford
Meadows, W. J.	Greensboro
Mebane, W. N.	Greensboro
Misenheimer, A. C. (Hon.)	Charlotte
Melvin, W. C.	Linden
Menzies, H. C.	Hickory
Merony, B. B.	Murphy
Merritt, J. H.	Woodsdale
Michaux, E. R.	Greensboro
Miles, Mary S.	Greensboro
Miller, O. O.	Asheville
Miller, R. B.	Goldsboro
Minor, C. L.	Asheville
Mitchell, G. W.	Macclesfield
Mitchell, W. F.	Shelby
Mock, F. L.	Lexington, R. F. D. 3
Moir, S. A.	Francisco
Monk, H. D.	Trenton
Monk, G. M.	Spencer
Monk, H. L.	Spencer
Monroe, J. P.	Sanford
Monroe, W. A.	Sanford
Moore, A. W.	Charlotte
Moore, C. E. (Hon.)	Wilson
Moore, C. E.	Greensboro
Moore, D. B.	Drexel
Moore, E. G.	Elm City
Moore, F. T.	Benson
Moore, H. T.	Wilmington
Moore, J. C.	Mortimer
Moore, J. L.	Wendell
Moore, J. N.	Marshall
Moore, K. C.	Wilson
Moore, Oren	Charlotte
Moore, T. V.	Acme
Moore, W. B.	Smith
Moore, W. H.	Wilmington
Moore, W. J.	Ashboro
Morphew, M. F.	Marion
Morris, E. R.	Asheville
Morrow, W. C.	Andrews
Morse, L. B.	Hendersonville
Moseley, C. W.	Greensboro
Moseley, H. P.	Farmville
Moseley, Z. V.	Kinston
Moser, W. D.	Burlington
Mudgett, W. C.	Southern Pines
Munroe, J. P.	Charlotte
Munns, L. A.	Smithfield
Munt, H. F.	Boardman
Murphy, J. G.	Wilmington
Murphy, W. B.	Snow Hill
Myerburg, I. W.	Pine Level
Myers, J. Q.	Charlotte
Naff, G. N.	Garysburg
Nalle, B. C.	Charlotte
Nance, G. B.	Monroe
Nash, J. F.	Bladenboro
Neal, J. W.	Meadows
Neal, J. W.	Monroe
Nelson, R. J.	Robersonville
Nesbitt, C. T.	Wilmington
Newbern, J. M.	Jarvisburg
Newby, G. E.	Hertford
Newell, H. A.	Louisburg
Newell, J. O.	Henderson, R. F. D. 4
Newell, L. B.	Charlotte
Nichols, A. A.	Sylva
Nichols, A. F.	Roxboro
Nichols, A. S.	Sylva
Nichols, C. G.	Roxboro
Nichols, R. E.	Gorman
Nicholson, B. M.	Ringwood
Nicholson, J. L. (Hon.)	Richlands
Nicholson, J. L.	Washington
Nicholson, J. T.	Bath
Nicholson, P. A.	Washington
Nicholson, S. T.	Washington
Nisbet, W. O.	Charlotte
Noble, R. J. (Hon.)	Selma
Nobles, J. E. (Hon.)	Greenville
Norman, G. W.	Greensboro
Norris, Henry	Rutherfordton
Northington, J. M.	Boardman
Norton, N. D.	Norlina
Ogburn, H. H.	Greensboro
Olive, P. W.	Wade
Olive, W. W.	Durham
Oliver, A. S.	Norlina
Orr, C. C.	Asheville
Orr, C. V.	Andrews
Orr, N. A.	Belmont
Orr, P. B.	Asheville
Packard, G. H.	White Rock
Paddison, J. R.	Kernersville
Page, B. W.	Lumberton
Palmer, B. H.	Shelby
Palmer, M. C.	Tryon
Palmer, R. W.	Gulf
Paquin, Paul	Asheville

Name.	*Address.*
Parker, C. G.	Woodland
Parker, G. E.	Benson
Parker, J. R.	Goldsboro
Parrott, A. D.	Kinston
Parrott, J. M.	Kinston
Parrott, W. T.	Kinston
Pate, F. J.	Greensboro
Pate, W. T.	Gibson
Patterson, J. A.	Concord
Patterson, J. F.	New Bern
Payne, R. L.	Monroe
Peck, E. J.	Hot Springs
Peeler, C. N.	Charlotte
Peete, C. H.	Warrenton
Pegram, R. W. S.	Wilkesboro, R. F. D. 2
Pemberton, W. D.	Concord
Pendleton, A. S.	Raleigh
Penny, J. A. J.	Vanteen
Pepper, J. K.	Winston
Perkins, D. R.	Marshville
Perkins, F. E.	Henderson
Perry, M. P. (Hon.)	Macon
Person, J. B.	Selma
Person, T. E.	Stantonsburg
Peterson, C. A.	Spruce Pine
Petrie, R. W.	Charlotte
Petteway, G. H.	Charlotte, R. F. D.
Pfohl, S. F.	Winston-Salem
Pharr, T. F. (Hon.)	Concord
Pharr, W. W.	Charlotte
Phifer, E. W.	Morganton
Phillips, C. H.	Fullers
Phillips, J. J.	Tarboro
Phillips, M. D.	Dalton
Pickett, J. A.	Burlington, R. F. D. 1
Pittman, R. L.	Fayetteville
Pitts, I. W.	Lenoir
Pollard, W. B.	Winton
Pollock, Raymond	New Bern
Potter, W. T.	Edward
Powell, H. H.	Stantonsburg
Powell, R. A.	Fayetteville
Pressley, G. M.	Charlotte
Price, H. L.	Locust
Pridgen, C. L.	Wilmington
Primrose, R. S.	New Bern
Prince, D. M. (Hon.)	Laurinburg
Pritchard, A. T.	Asheville
Pritchard, G. L.	Vanceboro
Pritchard, J. L.	Windsor
Proffitt, Myrtle	Elk Bend
Prumton, H. H.	Durham
Puett, B. V.	Dallas
Pugh, C. H.	Stanley
Purdy, J. J.	Oriental
Purefoy, G. W.	Asheville
Query, R. A.	Charlotte, R. F. D. 3
Quickel, T. C.	Gastonia
Quillen, E. B.	Rocky Mount
Raby, J. C.	Leggett
Rakestraw, A. F.	Asheville
Ramseur, G. A.	China Grove
Rankin, S. W.	Concord
Rankin, W. S.	Raleigh
Ranson, J. L.	Pineville, R. F. D. 15
Ray, J. B.	Leaksville
Ray, John E., Jr.	Raleigh
Ray, O. L.	Raleigh
Reaves, W. P.	Greensboro
Redding, A. H.	Coleridge
Reece, J. M.	Elkin
Reed, D. H.	Lucama
Reedy, Howard	Rowland
Reeves, A. F.	Asheville
Register, E. C.	Charlotte
Register, F. M.	Tillery
Reid, G. P.	Forest City
Reid, J. F.	Concord
Reid, J. W.	Lowell
Reid, R. M.	Gastonia
Reid, W. K.	Charlotte
Reitzel, C. E.	High Point
Reives, C. R.	Greensboro
Reives, J. T.	Greensboro
Reynolds, C. V.	Asheville
Reynolds, T. F.	Canton
Rhem, J. F.	New Bern
Rhodes, J. S.	Williamston
Rhyne, R. E.	Mount Holly
Rich, J. C.	Candler
Richardson, W. J.	Greensboro
Riddle, J. B.	Morganton
Riggsbee, A. E.	Morrisville
Ring, J. W.	Elkin
Ringer, P. H.	Asheville
Ritter, F. W.	Moyock
Roberson, Charles	Greensboro
Roberson, Foy	Durham
Roberson, M.	East Durham
Roberts, Frank	Marshall
Roberts, H. C.	Coats
Robinson, F.	Lowell
Robinson, M. E.	Goldsboro
Robinson, Newton	Elizabethtown

Name.	*Address.*
Robinson, W. F.	Mars Hill
Rodgers, W. D.	Warrenton
Rodman, J. C.	Washington
Rogers, J. R.	Raleigh
Rogers, W. A.	Franklin
Root, A. S.	Raleigh
Rose, A. S.	Fayetteville
Rose, A. H.	Smithfield
Ross, C. E.	Morganton
Ross, G. H.	East Durham
Ross, O. B.	Charlotte
Rosser, R. G.	Broadway
Rowe, H. B.	Mount Airy
Rowe, R. H.	Bessemer City
Royal, B. F.	Morehead City
Royall, M. A.	Elkin
Royster, H. A.	Raleigh
Royster, S. S.	Shelby
Royster, T. H.	Tarboro
Royster, W. I. (Hon.)	Raleigh
Russell, E. R.	Asheville
Russell, F. H.	Wilmington
Russell, J. M.	Canton
Russell, S. L.	Yadkinville
Saddler, R. C.	Whiteville
Saliba, John	Elizabeth City
Saliba, M. M.	Wilson
Salley, E. M.	Saluda
Sanderford, J. F.	Creedmoor
Saunders, J. H.	Williamston
Sawyer, C. J.	Windsor
Sawyer, C. W.	Elizabeth City
Sawyer, W. W.	Elizabeth City
Schallert, P. O.	Winston-Salem
Schaub, O. P.	Winston-Salem
Schonwald, J. L. (Hon.)	Wilmington
Schoonover, R. A.	Greensboro
Schubert, L. H.	Aurora
Sellers, R. R.	Rutherfordton
Sevier, D. E.	Asheville
Sevier, J. T.	Asheville
Sexton, C. H.	Dunn
Shafer, I. E.	Gold Hill
Shaffner, T. F., Sr. (Hon.)	Winston-Salem
Shamburger, J. B.	Star
Shaw, W. D.	Wagram
Sherrill, C. L.	Statesville
Shields, H. B.	Carthage
Shore, C. A.	Raleigh
Shore, T. W.	Boonville
Shuford, J. H.	Hickory
Shull, J. R.	Cliffside
Shupps, G. W.	Newton
Sigmon, F. G.	Spencer
Sikes, G. L.	Salemburg
Sikes, G. T. (Hon.)	Grissom
Siler, F. L.	Franklin
Simmons, J. O.	Charlotte
Simpson, J. R.	Conetoe
Sink, C. S.	North Wilkesboro
Skinner, L. C.	Greenville
Slate, W. C.	Danbury
Sloan, Henry	Ingold
Sloan, H. L.	Lincolnton
Sloan, J. M.	Gastonia
Slocumb, R. B.	Wilmington
Sloop, E. H.	Crossnore
Sloop, Mary M.	Crossnore
Smart, J. B.	Forest City
Smith, A. T.	Greensboro
Smith, B. R.	Asheville
Smith, F.	Linden
Smith, G. A.	Black Creek
Smith, H. T.	Anna
Smith, J. B.	Pilot Mountain
Smith, J. McN.	Rowland
Smith, O. F.	Scotland Neck
Smith, Owen	Asheville
Smith, R. A. (Hon.)	Goldsboro
Smith, R. W.	Hertford
Smith, W. F.	Chadbourn
Smith, W. H.	Mount Olive
Smithwick, J. E.	Jamesville
Smoot, J. E.	Concord
Smoot, M. L.	Fayetteville
Snipes, E. P.	Jonesboro
Somers, L. P.	Osbornville
Sorrell, L. P.	Raleigh
Spainhour, E. H.	Winston
Speight, J. W.	Roper
Speight, R. H., Sr. (Hon.)	Whitakers, R. F. D. 1
Spencer, F. B.	Salisbury
Spencer, W. O.	Winston
Spoon, O. A.	Revolution
Spoon, O. S.	Greensboro
Spruill, J. L.	Columbia
Squires, J. W.	Charlotte
Stack, R. E.	Bakersville
Stamps, Thomas	Lumber Bridge
Stancell, R. H.	Margarettsville
Stancell, W. W.	Raleigh
Stanton, D. A.	High Point
Staton, L. L.	Tarboro

Name.	*Address.*
Steele, E. S.	Hickory
Stephenson, M. R.	Seaboard
Stevens, J. A.	Clinton
Stevens, M. L.	Asheville
Stevens, S. A.	Monroe
Stewart, H. D.	Monroe
Stewart, J. J.	Conover
Stokes, J. E.	Salisbury
Storie, J. G.	Proctor
Stovall, Arnold	Wilmington
Street, M. E.	Glendon
Strickland, E. F.	Bethania
Strickland, J. A.	Zebulon
Strickland, J. T.	Nashville
Strickland, W. J.	Moncure
Stringfield, S. L.	Waynesville
Stringfield, Thomas	Waynesville
Strong, C. M.	Charlotte
Strosnider, C. F.	Wilmington
Stroud, O. B.	Ore Hill
Strowd, W. A.	Rougemont
Summer, T. W.	Fletcher
Summerell, E. N. (Hon.)	China Grove, R. F. D.
Summers, J. W.	Charlotte
Sumner, W. J.	Randleman
Sutton, J. R.	Elk Park
Swann, J. F.	Semora
Sweaney, John	Leaksville
Swett, W. P.	Southern Pines
Swindell, C. L.	Wilson
Tankersley, J. W.	Greensboro
Tate, C. S.	Ramseur
Tate, W. C.	Banners Elk
Tayloe, A. K.	Washington
Tayloe, D. T.	Washington
Tayloe, Josh.	Washington
Taylor, B. C.	Stanley
Taylor, F. R.	High Point
Taylor, I. M. (Hon.)	Morganton
Taylor, M. M.	Nebo
Taylor, T. G.	Leaksville
Taylor, W. I.	Kerr
Taylor, W. L.	Stovall
Taylor, W. S.	Mount Airy
Teague, R. J.	Durham
Templeton, J. M.	Cary
Tennent, G. S.	Asheville
Terrell, A. J.	Black Mountain
Terry, J. R.	Lexington
Terry, P. R.	Asheville
Terry, W. C.	Hamlet
Thames, John	Wilmington
Thigpen, W. J.	Tarboro
Thomas, G. G. (Hon.)	Wilmington
Thomas, W. N.	Oxford
Thompson, A. F.	Troy
Thompson, Cyrus	Jacksonville
Thompson, C. D.	Lincolnton
Thompson, Fred.	Pine Bluff
Thompson, J. B.	Bostic, R. F. D.
Thompson, J. R.	Wananish
Thompson, N. A.	Lumberton
Thompson, S. R.	Charlotte
Thompson, S. W.	Neuse
Thompson, W. A.	Rutherfordton
Tidwell, J. E.	Andrews
Tilson, J. C.	Marshall
Townsend, M. L.	North Wilkesboro
Trantham, H. L. (Hon.)	Salisbury
Trippe, C. M.	Charlotte
Troxler, R. M.	Burlington
Turner, H. G.	Raleigh
Tucker, H. McK.	Raleigh
Tucker, J. H.	Charlotte
Tull, Henry (Hon.)	Kinston
Turlington, H. C.	Cooper, R. F. D.
Turner, J. A.	High Point
Turner, J. M.	North Wilkesboro
Turner, J. P.	Greensboro
Tuttle, A. F.	Spray
Tuttle, R. G.	Walnut Cove
Twitty, J. C.	Rutherfordton
Tyson, T. D.	Pleasant Garden
Underhill, H. P.	Wendell
Underwood, O. E.	Roseboro
Upchurch, R. T.	Henderson
Utley, H. H.	Benson
Valk, A. deT.	Winston
VanPoole, C. M. (Hon.)	Salisbury
Vernon, J. W.	Morganton
Vestal, W. J.	Lexington
Vick, G. D.	Selma
VonRuck, K.	Asheville
VonRuck, S. H.	Asheville
Wadsworth, W. H.	Concord
Wakefield, H. A.	Charlotte
Wakefield, W. H.	Charlotte
Walker, C. E.	Charlotte
Walker, H. D.	Elizabeth City
Walker, L. A.	Burlington
Walker, W. E.	Burlington

Name.	*Address.*
Wall, R. L.	Winston
Wallace, J. W.	Concord
Wallis, W. J.	Brevard
Ward, F. A.	Ryland
Ward, H. D.	Southport
Ward, I. A.	Belvidere
Ward, J. E.	Robersonville
Ward, V. A.	Robersonville
Ward, W. H. (Hon.)	Plymouth
Warlick, E. S.	Morganton
Warren, R. F.	Prospect Hill
Warren, R. L.	Dunn
Warren, W. E.	Williamston
Washburn, B. E.	Port-of-Spain, Trinidad, B. W. I.
Watkins, F. B.	Morganton
Watson, J. B.	Raleigh
Watson, Leon	Broadway
Watts, R. E.	Oriental
Way, J. H.	Waynesville
Weaver, H. B. (Hon.)	Asheville
Weaver, W. J.	Asheville
Webb, B. G.	Andrews
Webb, L. H.	Chapel Hill
Webb, S. E.	Draper
Webb, W. P.	Rockingham
Wellborn, W. R.	Elkin
Wessell, J. C.	Wilmington
West, A.	Walstonburg, R. F. D.
West, G. H.	Newton
West, Lewis	Raleigh
West, R. M.	Salisbury
Wharton, L. D.	Smithfield
Whisnant, A. M.	Charlotte
Whitaker, A. C.	Julian
Whitaker, F. A.	Kinston
Whitaker, F. S.	Kinston
Whitaker, J. D.	Raleigh
Whitaker, R. A. (Hon.)	Kinston
Whitaker, R. B.	Whiteville
White, J. W.	Wilkesboro
Whitehead, J. P.	Rocky Mount
Whitehead, J. W. (Hon.)	Salisbury
Whitfield, W. C.	Grifton
Whitley, A. D. N.	Unionville
Whitley, D. P.	Albemarle
Whittington, J. B.	Winston
Whittington, W. P. (Hon.)	Asheville
Whittington, W. W.	Snow Hill
Wilcox, J. W.	Laurel Hill
Wilkerson, C. B.	Apex
Wilkerson, C. E.	Randleman
Watkins, R. B.	Raeford
Wilkins, S. A.	Dallas
Williams, A. F.	Wilson
Williams, B. B.	Greensboro
Williams, C. B.	Elizabeth City
Williams, J. A.	Greensboro
Williams, J. D.	Guilford
Williams, J. H. (Hon.)	Asheville
Williams, J. M.	Warsaw
Williams, J. W.	Everetts
Williams, T. R.	Venable
Willingham, B. J.	Wilmington
Wilmerding, W. E.	Selma
Wilson, A. R. (Hon.)	Greensboro
Wilson, C. L.	Lenoir
Wilson, F. G.	Gastonia
Wilson, N. G.	Summerfield
Wilson, J. E.	Canton, R. F. D.
Wilson, R. B.	Newton Grove
Wilson, W. E.	Sherrell's Ford
Wilson, W. P.	Madison
Windley, C. T.	Belhaven
Wiseman, C. B.	Henrietta
Witherbee, W. D.	Charlotte
Witherspoon, B. J.	Charlotte
Woltz, J. L.	Mount Airy
Wood, E. J.	Wilmington
Wood, J. W.	Shelby, R. F. D. 3
Woodard, A. G.	Princeton
Woodard, C. A.	Durham
Woodson, C. W.	Salisbury
Woody, S. B.	Spring Creek
Wooten, A. M.	Pinetops
Wrenn, Frank	Siler City
Wright, J. B.	Raleigh
Wright, S. G.	Elizabeth City, R. F. D.
Wright, T. H.	Charlotte
Yarborough, R. F.	Louisburg
Yokeley, R. V.	Lexington
York, A. A.	Linwood, R. F. D. 2
York, H. B.	Williamston
Young, J. J.	Clayton
Young, L. B.	Rolesville
Yow, I. A.	Georgeville
Zimmerman, R. U.	Lexington

NOTE.—The names of the following physicians have been reported twice:

James, W. D.
Long, B. L.
Moore, C. E.
Neal, J. W.

In each case two different addresses are given for these names, and they are reported as members of two different county societies.

LIST OF MEMBERS FOR 1915, BY COUNTIES.

NOTE.—Every physician in the State whose name we could secure has had an opportunity to supply correct information as to his name, post-office, academic and medical education, date of State license, and date the State Society was joined. A few did not take advantage of the opportunity, however. Any one finding an error should report it to the secretary of the society, so that the report for next year will be correct.

ALAMANCE COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President	----	----
Secretary, J. J. Barefoot, Graham	----	----
Anderson, C. A., Burlington	1893	1896
P. and S., Balt., 1901.		
Goley, W. R., Graham	1885	1893
P. and S., Balt., 1885.		
McPherson, C. W., Burlington	----	----
Moser, W. D., Burlington	----	----
Pickett, J. A., Burlington, R. F. D. 1	----	----
Troxler, R. M., Burlington	1914	1915
Univ. of Md., 1914.		
Walker, L. A., Burlington	1899	----
Univ. Coll. of Med., Va., 1898.		
Walker, W. E., Burlington	----	----

ALLEGHANY COUNTY SOCIETY.

President	----	----
Secretary	----	----
Choate, B. O., Sparta	1908	1910
Med. Coll. of Va., 1908.		
Smith, H. T., Anna	1908	1915
Med. Coll. of Va., 1908.		

AVERY COUNTY SOCIETY.

President	----	----
Secretary, Mary M. Sloop, Crossnore	1906	1913
Woman's Med. Coll. of Pa., 1906.		
Buchanan, C. L., Plumtree	1910	1911
Tenn. Med. Coll., 1910.		
Hodges, J. M., Cranberry	1906	----
Univ. of Md., 1904.		
Proffitt, Myrtle, Elk Bend	----	----
Sloop, E. H., Crossnore	1905	1909
N. C. Med. Coll., 1905; Jeff. Med. Coll., 1908.		
Sutton, J. R., Elk Park	1909	1911
Univ. of the South, 1904.		
Tate, W. C., Banners Elk	1909	1912
Tenn. Med. Coll., 1908.		

BEAUFORT COUNTY SOCIETY.

President, J. G. Blount, Washington	1892	1892
Bellevue Med., 1892.		
Secretary, H. W. Carter, Washington	1895	1910
Univ. of Va., 1895.		

Name and Address.	*Licensed.*	*Joined State Society.*
Hunter, H. H., Pinetown	1901	1904
Med. Coll. of Va., 1901.		
Jackson, C. C., Yeatesville	----	----
Nicholson, J. L., Washington	1880	----
Univ. of N. Y., 1875.		
Nicholson, J. T., Bath	1885	1885
P. and S., Balt., 1885.		
Nicholson, P. A., Washington	1889	1890
P. and S., Balt., 1889.		
Nicholson, S. T., Washington	1885	1902
P. and S., Balt., 1881.		
Potter, W. T., Edward	1910	1910
Med. Coll. of Va., 1910.		
Rodman, J. C., Washington	1892	1895
Bellevue Med. Coll., 1892.		
Tayloe, A. K., Washington	1896	1896
Univ. Coll. of Med., Va., 1897.		
Tayloe, D. T., Washington	1885	1885
Bellevue Med. Coll., 1885.		
Tayloe, Josh., Washington	1892	----
Bellevue Med. Coll., 1892.		
Windley, C. T., Belhaven	1893	1893
P. and S., Balt., 1893.		

BERTIE COUNTY SOCIETY.

President	----	----
Secretary, J. L. Pritchard, Windsor	1906	1907
P. and S., Balt.		
Evans, L. B., Windsor	1900	1904
Univ. Coll. of Med., Va., 1900.		
Sawyer, C. J., Windsor	----	----
P. and S., Balt.		

BLADEN COUNTY SOCIETY.

President, A. B. Holmes, Council	1910	----
Jefferson Med. Coll., 1910.		
Secretary, N. P. Liles, Elizabethtown	1911	----
S. C. Med. Coll., 1911.		
Clark, E. S., Clarkton	----	----
Clark, G. L., Clarkton	----	1904
Univ. of N. Y., 1876.		
Cromartie, R. S., Garland	----	----
Lucas, W. H. G., White Oak	----	1875
Univ. of Phila., 1870.		
Robinson, Newton, Elizabethtown	----	1904
Univ. of Pa., 1869.		

BRUNSWICK COUNTY SOCIETY.

President, E. G. Goodman, Lanvale	1891	1892
Univ. of Md., 1891.		
Secretary, J. A. Dosher, Southport	1903	1903
Balt. Med. Coll., 1903.		
Dickie, H. G., Town Creek	----	----
Goley, W. R., Shallotte	1901	----
Univ. Coll. of Med., Va., 1901.		
Ward, Hugh D., Southport	1914	1914
Univ. of Pa., 1914.		

BUNCOMBE COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President, E. B. Glenn, Asheville	1896	1899
Jefferson Med. Coll., 1896.		
Secretary, G. S. Tennent, Asheville	1894	1894
N. C. Med. Coll., 1894.		
Adams, J. L., Asheville	1910	1913
Jefferson Med. Coll., 1910.		
Ambler, C. P., Asheville	1890	1891
West. Reserv., 1889.		
Anderson, J. G., Asheville	1906	1908
Univ. of N. C., 1906.		
Archer, I. J., Black Mountain	1905	1906
Northwestern, 1896.		
Ballard, A. M., Asheville	1889	1904
Harvard, 1868.		
Battle, S. W., Asheville	1887	1887
Bellevue Med. Coll., N. Y., 1875.		
Briggs, W. H., Asheville	1901	1903
Yale, 1897.		
Brookshire, H. G., Leicester	1905	1906
N. C. Med. Coll., 1905.		
Brownson, W. S., Asheville	1885	1896
Univ. of N. Y., 1878.		
Buckner, J. M., Swannanoa	1909	1912
Univ. of N. C., 1908.		
Buckner, R. G., Asheville	1907	1908
Univ. of Ark., 1897.		
Callaway, A. W., Asheville	1899	1904
Chicago Med. School; Harvard Med. School, 1895.		
Carroll, J. L., Hookerton	1905	1905
Louisville Med. Coll., 1905.		
Carroll, R. S., Asheville	1905	1906
Sines, 1893; Rush, 1897.		
Cheeseborough, T. P., Asheville	1891	1899
Univ. of N. Y., 1891.		
Clemenger, F. J., Asheville	1903	1903
Univ. of Denver, Med. Dept., 1902.		
Cocke, C. H., Asheville	1912	1913
Cornell, 1905.		
Cocke, J. E., Asheville	1905	1905
Louisville Med. Coll., 1905.		
Colby, C. DeW., Asheville	1909	1909
Army Med. School, 1895; Univ. of Mich., Med. Dept., 1893.		
Costello, M. J., Asheville	1909	1911
Medico-Chirurgical, Phila., 1896.		
Cotton, C. E., Black Mountain	1901	1901
Northwestern, 1889.		
Davis, J. C., Candler	1909	1911
Atlanta School of Med., 1901.		
Dunn, W. L., Asheville	1900	1900
Univ. of Mich., 1891.		
Eckel, O. F., Asheville	1907	1908
Med. Coll. of S. C., 1906.		
Elias, L. W., Asheville	1906	1906
Columbia Univ., 1903.		
Fletcher, M. H. (Hon.), Asheville	1881	1881
Bellevue Med. Coll., 1881.		
Frazer, H. T., Asheville	1908	1908
Coll. Phys., N. Y., 1901.		

Name and Address.	*Licensed.*	*Joined State Society.*
Gardener, G. D., Asheville	1908	1908
Lincoln Memorial, 1908.		
Gill, J. N., Weaverville	1894	1892
Vanderbilt Univ., 1889.		
Greene, J. B., Asheville	1910	1911
Univ. of Va., 1893.		
Griffith, F. W., Asheville	1911	1912
Johns Hopkins, 1906.		
Harris, I. A. (Hon.), Alexander	1885	1881
Jefferson Med. Coll., Phila.		
Herbert, W. P., Asheville	1910	1911
Univ. of Va., 1907.		
Hollyday, W. M., Asheville	1914	1915
Univ. of Md., 1908.		
Honnicutt, W. J., Asheville	1908	1908
Univ. of Tenn., 1895.		
Huston, J. W., Asheville	1912	1913
Rush, Chicago, 1904.		
Johnson, Alice E., Asheville	1906	1907
Woman's Med. Coll., Pa., 1905.		
Jordan, C. S., Asheville	1891	1899
Univ. of N. Y., 1899.		
Lynch, J. M., Asheville	1912	1913
Univ. of Md., 1904.		
McBrayer, L. B., Sanatorium	1891	1899
Louisville Med. Coll., 1889.		
McCracken, C. M., Fairview	1896	1904
N. C. Med. Coll., 1896.		
Miller, O. O., Asheville	1913	1915
Univ. of Louisville, 1911.		
Minor, C. L., Asheville	1895	1895
Univ. of Va., 1888.		
Morris, E. R., Asheville	1896	1899
Louisville Med. Coll., 1896.		
Orr, C. C., Asheville	1904	1907
Univ. of Md., 1904.		
Orr, P. B., Asheville	1901	1904
Jefferson Med. Coll., Phila., 1901.		
Paquin, Paul, Asheville	1899	1899
Univ. of Mo., 1887.		
Pritchard, Arthur T., Asheville	1905	1906
Jefferson Med. Coll., Phila., 1905.		
Purefoy, G. W., Asheville	1884	1904
Jefferson Med. Coll., Phila., 1876.		
Rakestraw, C. M., Asheville	1914	1915
Reeves, A. F., Asheville	1909	1910
George Washington Univ., 1906.		
Reynolds, C. V., Asheville	1895	1896
Univ. of N. Y., 1895.		
Rich, J. C., Candler	1908	1908
Univ. of Nashville, 1908.		
Ringer, P. H., Asheville	1906	1907
P. and S., N. Y., 1904.		
Russell, E. R., Asheville	1895	1898
Univ. of Md., 1895.		
Sevier, D. E., Asheville	1895	1899
Jefferson Med. Coll., Phila., 1895.		
Sevier, J. T., Asheville	1895	1899
Jefferson Med. Coll., Phila., 1895.		

Name and Address.	*Licensed.*	*Joined State Society.*
Smith, B. R., Asheville Jefferson Med. Coll., Phila., 1911.	1913	1913
Smith, Owen, Asheville Jefferson Med. Coll., Phila., 1904.	1905	1905
Stevens, M. L., Asheville Balt. Med. Coll., 1891.	1892	1893
Terrell, A. J., Black Mountain Univ. of N. C., 1908.	1908	1909
Terry, P. R., Asheville George Washington Univ., 1906.	1912	1913
VonRuck, K., Asheville Univ. of Tubingen, 1878.	1889	1889
VonRuck, S. H., Asheville Bellevue Med. Coll., 1899.	1899	1902
Weaver, H. B. (Hon.), Asheville Washington Univ., Balt., Md., 1872.	1881	1881
Weaver, W. J., Asheville	----	1915
Whittington, W. P. (Hon.), Asheville P. and S., Balt., 1882.	1882	1882
Williams, John Hay (Hon.), Asheville Med. Dept., Iowa S. Univ., 1863.	1881	1881

BURKE COUNTY SOCIETY.

President, F. B. Watkins, Morganton Jefferson Med. Coll., Phila., 1907.	1907	1910
Secretary, W. R. Griffin, Morganton Jefferson Med. Coll., Phila., 1910.	1910	1913
Anderson, J. R., Morganton Tulane Univ., 1882.	1885	1903
Anderson, P. V., Richmond, Va. Univ. of Va., 1904.	1904	1906
Gayle, E. M., Morganton Univ. of Va., 1902.	1902	1912
Hall, J. K., Richmond, Va. Jefferson Med. Coll., 1904.	1906	1906
Hennessee, E. A., Glen Alpine U. S. Grant Univ., 1900.	1902	1904
Houck, Albert, Morganton P. and S., Balt., 1884.	1891	1893
Long, B. L., Glen Alpine N. C. Med. Coll., 1913.	1913	1914
McCampbell, John Balt. Med. Coll., 1894.	1895	1899
Moore, D. B., Drexel Univ. Coll. of Med., Va., 1913.	1913	1915
Phifer, E. W., Morganton N. C. Med. Coll., 1901.	1902	1904
Riddle, J. B., Morganton Vanderbilt Univ., 1898.	1904	1904
Ross, Charles E., Morganton Univ. of Md., 1889.	1889	1909
Taylor, Isaac M. (Hon.), Morganton P. and S., N. Y., 1882.	1883	1883
Vernon, J. W., Morganton Jefferson Med. Coll., Phila., 1909.	1909	1913
Warlick, E. S., Morganton Vanderbilt Univ., 1881.	1881	1903

CABARRUS COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President, J. E. Smoot, Concord	1894	1902
Balt. Med. Coll., 1893.		
Secretary, R. M. King, Concord	1903	1905
Jefferson Med. Coll., Phila., 1903.		
Black, J. C., Harrisburg	1886	1891
Univ. of Md., 1886.		
Buchanan, S. E., Concord	1912	1914
Univ. of Md., 1912.		
Bunn, J. J., Mount Pleasant	1913	1915
N. C. Med. Coll., 1912.		
Caldwell, D. G. (Hon.), Concord	1885	1885
Univ. of Md., 1885.		
Cauble, H. H., Kannapolis	1907	1910
N. C. Med. Coll., 1907.		
Earnhardt, J. M., Mount Pleasant	1914	1915
Univ. Coll. of Med., Va., 1913.		
Flows, J. W., Kannapolis	1903	1903
N. C. Med. Coll., 1898.		
Flows, M. A., Kannapolis	1914	1915
N. C. Med. Coll., 1913.		
Foil, M. A., Mount Pleasant	1891	1908
Jefferson Med. Coll., 1891.		
Gouger, G. J., Concord, R. F. D.	1891	1899
Univ. of Md., 1891.		
Grier, S. A., Harrisburg	1885	1904
Jefferson Med. Coll., 1879.		
Lafferty, J. S., Concord	1885	1890
Univ. of Md., 1881.		
McFayden, P. R., Concord	1901	1904
Med. Coll. of Va., 1901.		
Patterson, John A., Concord	1911	1912
Univ. Coll. of Med., Va., 1911.		
Pemberton, W. D., Concord	1887	1887
Univ. of Md., 1887.		
Pharr, T. F. (Hon.), Concord	1881	1881
Bellevue Med. Coll., 1877.		
Rankin, S. W., Concord	1912	1914
Jefferson Med. Coll., Phila., 1912.		
Reed, J. F., Concord	1909	1912
Univ. of N. Y., 1893.		
Wadsworth, W. H., Concord	1913	1913
Jefferson Med. Coll., Phila., 1911.		
Wallace, J. W., Concord	1907	1908
N. C. Med. Coll., 1907.		
Yow, I. A., Georgeville	1907	1910
N. C. Med. Coll., 1906.		

CALDWELL COUNTY SOCIETY.

President, B. G. Flowers, Granite Falls	1884	1904
Secretary, A. A. Kent, Lenoir	1885	1894
Jefferson Med. Coll., Phila., 1885.		
Bingham, G. P., Lenoir	1913	1914
Hospital Med. Coll., Atlanta, 1907.		
Carter, G. H., King's Creek	----	1904
Univ. of N. Y., 1877.		

Name and Address.	*Licensed.*	*Joined State Society.*
Coffey, L. H., Valmead	1906	1906
Med. Coll. of Va., 1906.		
Corpening, O. J., Granite Falls	1906	1906
Med. Coll. of Va.		
Goodman, A. B., Lenoir	1897	1904
N. C. Med. Coll., 1898.		
Moore, J. C., Mortimer	1907	1908
Univ. Coll. of Med., Va., 1907.		
Pitts, I. W., Lenoir	1901	1911
Univ. of the South, Med. Dept., 1902.		
Storie, J. G., Proctor	1898	1908
Tenn. Med. Coll., 1898.		
Wilson, C. L., Lenoir	1903	1905
U. S. Grant Univ., 1903.		

CARTERET COUNTY SOCIETY.

President, C. L. Duncan, Beaufort	1902	1904
Univ. of Md., 1902.		
Secretary, W. E. Headen, Morehead City	1890	1891
Univ. of Md., 1891.		
Ball, M. W., Newport	1911	1913
Bonner, K. P. B., Morehead City	1905	1905
Med. Coll. of Va., 1905.		
George, David S., Marshallburg	1903	1903
N. C. Med. Coll., 1903.		
Maxwell, C. S., Beaufort	1899	1903
Univ. of the South, 1901.		
Royal, B. F., Morehead City	1909	1909
Jefferson Med. Coll., Phila., 1909.		

CASWELL COUNTY SOCIETY.

President	----	----
Secretary	----	----
Malloy, S. A., Yanceyville	1898	1903
Ky. School of Med., 1897.		

CATAWBA COUNTY SOCIETY.

President	----	----
Secretary, G. W. Shupps, Newton	----	----
Blackburn, T. C., Hickory	----	----
Campbell, J. R., Newton	----	----
Flowers, G. E., Hickory	----	----
Herman, F. L., Conover	----	----
Housacker, Charles G., Hickory	----	----
Long, Fred. Y., Catawba	----	----
Long, Glenn, Catawba	----	----
Long, T. W., Newton	----	----
Menzies, H. C., Hickory	----	----
Shuford, J. H., Hickory	----	----
Steele, E. S., Hickory	----	----
Stewart, J. J., Conover	----	----
West, G. H., Newton	----	----
Wilson, W. E., Sherrill's Ford	----	----

CHATHAM COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President, B. H. Hackney, Bynum	1911	1912
Tulane Univ., 1911.		
Secretary, H. T. Chapin, Pittsboro	1886	1886
Louis. Med. Coll., 1886.		
Denson, H. A., Bennett	1913	1887
Coll. P. and S., Indianapolis, Ind., 1887.		
Edwards, J. D., Siler City	----	1894
Louis. Med. Coll., 1887.		
Farthing, L. E., Pittsboro	1906	1906
Univ. of N. C., 1906.		
Fields, R. M., Goldston	1909	----
Laster, P. D., Moncure, R. F. D. 1	1885	1890
Louis. Med. Coll., 1875.		
McManas, W. L., Bonlee	1912	----
Atlanta School of Med., 1906.		
Palmer, R. W., Gulf	1891	1891
Louisville Med. Coll., 1890.		
Strickland, W. J., Moncure	1890	----
Univ. of Md., 1890.		
Stroud, O. B., Ore Hill	1888	1892
P. and S., Balt., 1877.		
Wrenn, Frank, Siler City	1912	----
Jefferson Med. Coll., Phila., 1912.		

CHEROKEE COUNTY SOCIETY.

President, N. B. Adams, Murphy	1909	1909
Tenn. Med. Coll., 1896.		
Secretary, J. N. Hill, Murphy	1909	1909
Univ. of Louisville, 1909.		
Heighway, S. C., Murphy	1898	1898
Med. Coll. of Ohio, 1885.		
Herbert, F. L., Andrews	1912	1912
Tenn. Med. Coll., Knoxville, 1904.		
McKaig, F. T., Andrews	1906	1906
Alabama Medical Coll., 1890.		
Meroney, B. B. Murphy	1908	1908
Gate City Med. Coll., Texas, 1906.		
Morrow, W. C., Andrews	1909	1909
Atlanta School of Med., 1907.		
Orr, C. V., Andrews	1909	1909
Univ. of Louisville, 1909.		
Tidwell, J. E., Andrews	1914	1915
Chattanooga Med. Coll.		
Webb, B. G., Andrews	1885	1885
Louisville Med. Coll., 1885.		

CHOWAN-PERQUIMANS COUNTY SOCIETY.

President, John H. McMullan, Edenton	1876	1876
Univ. of Md., 1876.		
Secretary, H. M. S. Cason, Edenton	1899	1899
Univ. of Md., 1899.		
Dillard, Richard (Hon.), Edenton	----	----
Newby, G. E., Hertford	1901	----
Jefferson Med. Coll., Phila., 1900.		

Name and Address.	*Licensed.*	*Joined State Society.*
Smith, R. W., Hertford Univ. of Md., 1887.	1892	1911
Ward, F. A., Ryland Med. Coll. of Va., 1899.	1899	1913
Ward, I. A., Belvidere	----	1915

CLEVELAND COUNTY SOCIETY.

President, J. W. Wood, Shelby, R. F. D. 3 Louisville Med. Coll., 1892.	1903	1904
Secretary, T. B. Gold, Lawndale Charlotte Med. Coll.	----	1914
Champion, C. O., Mooresboro Atlanta Med. Coll., 1887.	1902	1904
Ellis, R. C., Shelby Balt. Univ. School of Med., 1886.	----	1904
Grigg, W. T., Lawndale Atlanta Med. Coll., 1891.	1904	1904
Hamrick, T. G., Shelby P. and S., Balt., 1895.	1895	1904
Houser, E. A., Fallston Balt. Univ., 1902.	1902	1904
Hunt, J. F., Casar Univ. of Tenn., 1900.	1900	1912
Lattimore, E. B., Shelby Bellevue Med. Coll., 1898.	1896	1904
Lee, L. V., Lattimore Atlanta Med. Coll., 1894.	1897	1904
Mitchell, W. F., Shelby Univ. of Md., 1890.	1900	1904
Palmer, B. H., Shelby Louisville Med. Coll., 1896.	1898	1904
Royster, S. S., Shelby Tennessee Med. Coll., 1890.	1896	1904

COLUMBUS COUNTY SOCIETY.

President, J. M. Northington, Boardman Med. Coll. of Va., 1905.	1909	1910
Secretary, R. C. Sadler, Whiteville	----	----
Floyd, A. G., Fair Bluff Univ. of Md., 1885.	1887	1904
Maxwell, H. B., Whiteville Univ. of Md., 1902.	1902	1902
Moore, T. V., Acme Balt. Med. Coll., 1901.	1901	1901
Munt, H. F., Boardman	----	----
Smith, W. F., Chadbourn N. C. Med. Coll., 1904.	1904	1904
Thompson, J. R., Wananish	----	----
Whitaker, R. B., Whiteville Univ. Coll. of Med., Va.	1912	1912

CRAVEN COUNTY SOCIETY.

President, H. M. Bonner, New Bern Med. Coll. of Va., 1897.	1897	----
Secretary, G. A. Caton, New Bern Med. Coll. of Va., 1898.	1898	1904

Name and Address.	*Licensed.*	*Joined State Society.*
Duffy, Lewiston, New Bern	1888	----
P. and S., Balt., 1889.		
Duffy, R. N., New Bern	1907	1907
Johns Hopkins, 1906.		
Gibbs, N. M., New Bern	1895	1895
Univ. of Md., 1896.		
Jones, R. D., New Bern	1897	1897
Univ. of Md., 1896.		
Patterson, J. F., New Bern	1906	1906
Jefferson Med. Coll., Phila., 1906.		
Pollock, Raymond, New Bern	1900	1900
Jefferson Med. Coll., Phila., 1899.		
Primrose, R. S., New Bern	1890	1896
Bellevue Med. Coll., 1889.		
Pritchard, G. L., Vanceboro	1913	----
Univ. Coll. of Med., Va., 1913.		
Rhem, J. F., New Bern	1893	1893
Bellevue Med. Coll., 1894.		

CUMBERLAND-HOKE COUNTY SOCIETY.

President, R. B. Hays, Fayetteville	1910	1910
Univ. of Md., 1906.		
Secretary, R. L. Pittman, Fayetteville	1910	1912
Jefferson Med. Coll., Phila., 1910.		
Averitt, K. G., Cedar Creek	1893	1902
Balt. Med. Coll., 1893.		
Aydlett, J. P., Earl	1903	1904
Univ. of Ky., 1901.		
Brown, G. W., Raeford	1900	1904
Ky. School of Med., 1898.		
Bullock, T. C., Autryville	1885	----
P. and S., Balt., 1885.		
Dickson, A. P., Raeford	----	1906
Univ. of N. Y., 1878.		
Graham, G. A., Raeford	----	1905
Univ. of N. Y., 1876.		
Highsmith, J. F., Fayetteville	1889	1893
Jefferson Med. Coll., Phila., 1889.		
Highsmith, Seavy, Fayetteville	1901	1901
Univ. Coll. of Med., Va., 1901.		
Hutchinson, S. S., Hope Mills	1911	1912
N. C. Med. Coll., 1911.		
Jordan, W. S., Fayetteville	1906	1906
Univ. of N. C., Med. Dept., 1906.		
Juat, Francis, Raeford	1910	1910
Univ. of Berne, 1886.		
Lilly, J. M., Fayetteville	1903	1904
Univ. Coll. of Med., Va., 1903.		
McGougan, J. V., Fayetteville	1893	1904
Univ. of Md., 1893.		
MacKethan, D. G., Fayetteville	1899	1899
Univ. Coll. of Med., Va., 1899.		
MacKethan, J. A., Fayetteville	1901	1901
N. C. Med. Coll., 1901.		
McNeill, J. W. (Hon.), Fayetteville	1876	1876
Bellevue Med. Coll., 1876.		
Nash, J. F., Bladenboro	1914	1914
N. C. Med. Coll., 1914.		

Name and Address.	*Licensed.*	*Joined State Society.*
Olive, P. W., Wade	1907	1908
P. and S., Balt., 1907.		
Powell, R. A., Fayetteville	1907	1908
Univ. Coll. of Med., Va., 1907.		
Rose, A. S., Fayetteville	1901	1904
Univ. Coll. of Med., Va., 1901.		
Smoot, M. L., Fayetteville	1901	1904
Univ. Coll. of Med., Va., 1901.		
Wilkins, R. B., Raeford	1913	1913
N. C. Med. Coll., 1913.		

CURRITUCK COUNTY SOCIETY.

President, Stuart Mann, Moyock	1895	----
P. and S., Balt., 1895.		
Secretary, W. T. Griggs, Poplar Branch	1896	1901
Univ. of Va., 1896.		
Caldwell, W. H., Snowden	----	----
Cowell, Will, Shawboro	----	----
Maynard, J. D., Knott's Island	1908	1908
Univ. of N. C., 1908.		
Newbern, J. M., Jarvisburg	1899	----
Georgetown Med. Coll., 1898.		
Ritter, F. W., Moyock	1885	----

DAVIDSON COUNTY SOCIETY.

President, C. A. Julian, Thomasville	1891	----
Louisville Med. Coll., 1888.		
Secretary, C. M. Clodfelter, Lexington	1905	1905
P. and S., Balt., 1905.		
Bowers, M. A., Thomasville	1911	----
Tulane Univ., 1911.		
Buchanan, E. J., Lexington	1892	1900
Univ. of Md., 1892.		
Cathell, J. E., Linwood, R. F. D. 1	1902	----
Univ. of Md., 1899.		
Hill, D. J., Lexington	1893	1894
P. and S., Balt., 1893.		
Leonard, G. F., Washington, D. C.	1912	----
Mock, F. L., Lexington, R. F. D. 3	1908	1908
N. C. Med. Coll., 1898.		
Terry, J. R., Lexington	1912	1912
Univ. of Tenn., 1911.		
Vestal, W. J., Lexington	1885	1893
P. and S., Balt., 1883.		
Yokeley, R. V., Lexington	1911	----
N. C. Med. Coll., 1911.		
York, A. A., Linwood, R. F. D. 2	1907	1907
Chattanooga Med. Coll., 1907.		
Zimmerman, R. U., Lexington	1901	1904
N. C. Med. Coll., 1901.		

DUPLIN COUNTY SOCIETY.

President,	----	----
Secretary,	----	----
Carroll, J. W., Wallace	1903	1903
Univ. of Md., 1903.		

Name and Address.	*Licensed.*	*Joined State Society.*
Crocker, W. D., Warsaw	1896	1896
Louisville Med. Coll., 1897.		
Graham, B. R., Wallace	1895	1899
Univ. of Va., 1895.		
Williams, J. M., Warsaw	1902	1902
Univ. of Md., 1902.		

DURHAM-ORANGE COUNTY SOCIETY.

President, C. A. Woodard, Durham	1904	1907
Univ. of Va., 1904.		
Secretary, Foy Roberson, Durham	1909	1912
Jefferson Med. Coll., 1909.		
Abernethy, E. A., Chapel Hill	1901	1905
Med. Coll. of Va., 1901.		
Adams, C. A., Durham	1892	1892
Coll. of P. and S., Balt., 1892.		
Bitting, N. D., Durham	1907	1908
Jefferson Med. Coll., Phila., 1907.		
Boddie, N. P. (Hon.), Durham	1883	1883
P. and S., Balt., 1883.		
Booker, L. S., Durham	1910	1910
Univ. Coll. of Med., Va., 1908.		
Boone, W. H., Durham	1902	1902
N. C. Med. Coll., 1902.		
Bowling, E. H., Durham	1890	1906
P. and S., Balt., 1891.		
Boyles, A. C., Durham	1887	1887
Univ. of Md., 1887.		
Brooks, B. U., Durham	1905	1905
Univ. of Md., 1905.		
Bullitt, J. B., Chapel Hill	1914	1914
Univ. of Va., 1897.		
Cheatham, Archibald, Durham	1888	1888
Univ. of Md., 1888.		
Coiner, N. L., Durham	1911	1912
Univ. of Md., 1884.		
Fassett, B. W., Durham	1899	1903
Balt. Med. Coll., 1898.		
Felts, R. L., Durham	1901	1901
Univ. of Md., 1898.		
Graham, Joseph, Durham	1901	1901
Univ. of Pa., 1901.		
Hicks, C. S., Durham	1904	1904
Univ. of Md., 1904.		
Hicks, W. N., Durham	1885	1885
Med. Coll. of Va., 1864.		
Hill, C. D., Durham	1912	1912
Univ. of Va., 1888.		
Holloway, R. L., West Durham	1893	1893
Med. Coll. of Va., 1893.		
Johnson, N. M. (Hon.), Durham	1879	1879
P. and S., Balt., 1877.		
Jordan, A. C., Durham	1885	1904
P. and S., Balt., 1881.		
Kerns, T. C., Durham	1911	1912
Univ. of Pa., 1911.		
King, M. N., Durham	1910	1910
Univ. of Md., 1898.		

Name and Address.	*Licensed.*	*Joined State Society.*
Lloyd, B. B., Venable	1909	1914
Univ. of N. C., 1909.		
Lyon, E. H., Bahama	1904	1911
Univ. of Md., 1904.		
MacNider, W. DeB., Chapel Hill	1902	1902
Univ. of N. C., 1902.		
Manning, I. H., Chapel Hill	1899	1899
Long Island College Hospital, Brooklyn, 1897.		
Manning, J. M., Durham	1897	1897
Bellevue Med. Coll., 1897.		
McPherson, S. D., Durham	1903	1903
Univ. of Md., 1903.		
Nichols, R. E., Gorman	1890	1904
Va. Med. Coll., Richmond, Va.		
Olive, W. W., Durham	1907	1908
Univ. of Md., 1906.		
Prumton, H. H., Durham	1907	1908
Bowdoin, 1906.		
Roberson, M., East Durham	1912	1912
Va. Med. Coll., 1912.		
Ross, G. H., East Durham	1899	1899
Univ. of Tenn., 1899.		
Strowd, W. A., Rougemont	1909	1909
Univ. of N. C., 1909.		
Teague, R. J., Durham	1890	1890
Univ. of Md., 1890.		
Webb, L. H., Chapel Hill	1910	----
Jefferson Med. Coll., Phila., 1910.		
Williams, T. R., Venable	----	----

EDGECOMBE COUNTY SOCIETY.

President, J. C. Raby, Leggett	1911	1911
Univ. Coll. of Med., Va., 1911.		
Secretary, J. J. Phillips, Tarboro	1905	1905
P. and S., N. Y., 1894.		
Baker, J. M. (Hon.), Tarboro	1879	1879
Univ. of Md., 1879.		
Bass, S. P., Tarboro	1907	1908
Univ. of Va., 1906.		
Green, W. W., Tarboro	1908	1908
Univ. of N. C., 1908.		
Harrell, S. N., Tarboro	1897	1897
Univ. of Md., 1897.		
Mitchell, G. W., Macclesfield	1913	1913
Univ. Coll. of Med., Richmond, 1908.		
Royster, T. H., Tarboro	1908	1908
Univ. Coll. of Med., Richmond, 1908.		
Simpson, J. R., Conetoe	1909	1909
Med. Coll. of Va., 1909.		
Speight, R. H., Sr. (Hon.), Whitakers, R. F. D. 1	1875	1875
Univ. of Md., 1870.		
Staton, L. L., Tarboro	1870	1900
Univ. of N. Y., 1870.		
Thigpen, W. J., Tarboro	1900	1900
Jefferson Med. Coll., Phila., 1900.		
Wooten, A. M., Pinetops	1910	1910
Univ. of N. C., 1910.		

FORSYTH COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President, E. P. Gray, Winston-Salem	1907	1907
Johns Hopkins, 1906.		
Secretary, R. L. Wall, Winston	1912	1913
Jefferson Med. Coll., Phila., 1912.		
Bahnson, H. T. (Hon.), Winston-Salem	1869	1869
Univ. of Pa., 1867.		
Bynum, John, Winston-Salem	1892	1900
Univ. of N. Y., 1892.		
Bynum, W. H., Germanton	1900	1900
Univ. Coll. of Med., Va., 1900.		
Carlton, R. L., Kernersville	1906	1906
Univ. of Md., 1906.		
Chaney, T. M., Winston-Salem	1908	1908
Univ. of Md., 1906.		
Craig, S. D., Winston-Salem	1908	1911
Tulane Univ., 1908.		
Dalton, D. N., Winston-Salem	1885	1886
Univ. of N. Y., 1881.		
Dalton, W. N., Winston-Salem	----	1915
N. C. Med. Coll.		
Davis, A. P., Winston-Salem	1896	1904
Kentucky Med. School, 1894; George Washington Univ., 1906.		
Davis, T. W., Winston-Salem	1900	1901
Med. Coll. of S. C., 1898.		
Dowdy, G. E., Winston-Salem	1909	1909
Univ. of Md., 1909.		
Edwards, A. D., Winston-Salem	1904	1904
Univ. of Md., 1903.		
Fearington, J. P., Winston-Salem	1887	1904
Univ. of Md., 1887.		
Flint, S. S., Rural Hall	1890	1906
P. and S., Balt., 1889.		
Grimes, W. S., Winston-Salem	1910	1915
Johns Hopkins, 1910.		
Hammock, J. C., Walkertown	1895	1905
P. and S., Balt., 1895.		
Hurdle, S. W., Lewisville	1914	1914
Jefferson Med. Coll., Phila., 1914.		
Jewett, R. D., Winston-Salem	1890	1890
Univ. of Va., 1888.		
Johnson, W. M., Winston-Salem	1908	1910
Jefferson Med. Coll., Phila., 1908.		
Kapp, H. H., Winston-Salem	1901	1904
Jefferson Med. Coll., Phila., 1901.		
Lawrence, C. S., Winston-Salem	1908	1908
George Washington Univ., 1908.		
Linville, A. Y., Winston-Salem	1889	1889
Univ. of N. Y., 1889.		
Lockett, E. A., Winston-Salem	1903	1903
Univ. of Pa., 1902.		
Long, W. McK., Winston-Salem	1906	1906
N. C. Med. Coll., 1906.		
Lott, H. S., Winston-Salem	1887	1887
Univ. of Georgia, 1884.		
Paddison, J. R., Kernersville	1902	----
Univ. of Md., 1902.		
Pate, F. J., Greensboro	1908	1910
Univ. of Md., 1908.		

Name and Address.	*Licensed.*	*Joined State Society.*
Pepper, J. K., Winston-Salem	1908	1908
P. and S., Balt., 1907.		
Pfohl, S. F., Winston-Salem	1898	1898
Univ. of Pa., 1894.		
Schallert, P. O., Winston-Salem	1904	1904
Univ. of Ill., Med. Dept., 1904.		
Schaub, O. P., Winston-Salem	1898	1898
Balt. Med. Coll., 1898.		
Shaffner, T. F., Sr. (Hon.), Winston-Salem	----	----
Spainhour, E. H., Winston-Salem	1898	1898
Balt. Med. Coll., 1898.		
Spencer, W. O., Winston-Salem	1891	1894
Jeff. Med. Coll., Phila., 1891.		
Strickland, E. F., Bethania	1887	1903
Univ. of N. Y., 1887.		
Valk, A. deT., Winston-Salem	1913	1913
Johns Hopkins, 1910.		
Whittington, J. B., Winston-Salem	1911	1911
N. C. Med. Coll., 1911.		

FRANKLIN COUNTY SOCIETY.

President, R. F. Yarborough, Louisburg	1899	1899
Columbia Univ., D. C., 1898.		
Secretary, H. A. Newell, Louisburg	1906	1906
P. and S., Balt., 1906.		
Bobbitt, E. H., Louisburg	----	1886
Univ. of Md., 1877.		
Burt, S. P., Louisburg	1896	1904
P. and S., Balt., 1896.		
Chapin, W. B., Youngville	1909	1909
Univ. of N. C., 1909.		
Floyd, R. P., Louisburg, R. F. D. 1	----	1904
S. C. Med. Coll., 1878.		
Harris, J. H., Franklinton	1886	1904
Bellevue Med. Coll., 1886.		
Henderson, R. B., Franklinton	1887	1904
Univ. of Md., 1887.		
Johnson, B. C., Bunn	1910	1910
Univ. of N. C., 1909.		
Malone, J. E., Louisburg	1885	1904
Bellevue Med. Coll., 1875.		
Newell, J. O., Henderson, R. F. D. 4	1910	1910
P. and S., Balt., 1910.		

GASTON COUNTY SOCIETY.

President, D. A. Garrison, Gastonia	1896	1899
Louisville Med. Coll., 1896.		
Secretary, B. V. Puett, Dallas	1909	1910
Woman's Med. Coll., Balt., 1909.		
Adams, C. E., Gastonia	1885	1904
Univ. of Md., 1878.		
Anders, M. G., Gastonia	1902	1902
Med. Coll. of Va., 1901.		
Anderson, J. A., McAdenville	1909	1909
Univ. of Ga., 1899.		
Anthony, J. E., Kings Mountain	1911	1911
Univ. of Tenn., 1911.		

Name and Address.	*Licensed.*	*Joined State Society.*
Davis, W. W., Belmont	1885	1908
Ky. School of Med., 1875.		
Eddleman, H. M., Gastonia	1886	1904
Ky. School of Med., 1886.		
Garren, R. H., Bessemer City	1901	1904
Univ. of Nashville, 1900.		
Glenn, H. F., Gastonia	1900	1904
P. and S., Atlanta, 1900.		
Glenn, L. N., Gastonia	1897	1897
Univ. of Md., 1897.		
Hunter, M. C., Huntersville	1882	1904
P. and S., Balt., 1882.		
Jenkins, J. H., Gastonia	1888	1888
Ky. School of Med., 1887.		
McCombs, C. J., Gastonia	1905	1908
N. C. Med. Coll., 1905.		
McCoy, T. M., Mount Holly	1906	1907
N. C. Med. Coll., 1905.		
Orr, N. A., Belmont	1904	1911
Univ. Coll. of Med., Va., 1904.		
Pugh, C. H., Stanley	1910	1910
N. C. Med. Coll., 1910.		
Quickel, T. C., Gastonia	1899	1904
Tulane Univ., 1900.		
Reid, J. W., Lowell	1909	1909
Jefferson Med. Coll., Phila., 1909.		
Reid, R. M., Gastonia	1890	1903
Univ. of N. Y., 1890.		
Rhyne, R. E., Mount Holly	1907	1908
N. C. Med. Coll., 1907.		
Robinson, F., Lowell	1878	1904
Louisville Med. Coll., 1878.		
Rowe, R. H., Bessemer City	1912	1913
Univ. of Louisville, 1912.		
Sloan, J. M., Gastonia	1891	1904
Louisville Med. Coll., 1891.		
Wilkins, S. A., Dallas	1903	1903
Univ. of Ky., 1902.		
Wilson, F. G., Gastonia	1896	1899
Univ. of Md., 1896.		

GRANVILLE COUNTY SOCIETY.

President.	----	----
Secretary.	----	----
Booth, S. D., Oxford	1885	----
Med. Coll. of Va., 1867.		
Booth, T. L., Oxford	1885	----
Med. Coll. of S. C., 1883.		
Bullock, W. B., Hester	1892	----
Bellevue Med. Coll., 1892.		
Hardee, P. R., Stem	1885	1885
P. and S., Balt., 1885.		
Hays, B. K., Oxford	1894	1896
Univ. Coll. of Med., Va., 1894.		
Holloway, O. W., North Side	1901	1903
Med. Coll. of Va., 1901.		
Meadows, E. B., Oxford	1901	1901
Univ. Coll. of Med., Va., 1901.		

Name and Address.	*Licensed.*	*Joined State Society.*
Sanderford, J. F., Creedmoor P. and S., Balt., 1890.	1890	1891
Sikes, G. T. (Hon.), Grissom Univ. of Md., 1883.	1884	1884
Taylor, W. L., Stovall Univ. of Va., 1900.	1900	1900
Thomas, W. N., Oxford Med. Coll. of Va., 1911.	1911	----

GREENE COUNTY SOCIETY.

President, W. B. Murphy, Snow Hill Univ. Coll. of Med., Va., 1903.	1903	1903
Secretary, G. C. Edwards, Hookerton Bellevue Med. Coll., 1883.	1883	1883
Harper, J. H., Snow Hill Jefferson Med. Coll., Phila., 1906.	1906	1906
West, A., Walstonburg, R. F. D.	----	----
Whittington, W. W., Snow Hill Louisville Med. Coll, 1895.	1895	1898

GUILFORD COUNTY SOCIETY.

President, C. W. Moseley, Greensboro Balt. Med. Coll., 1893.	1893	1896
Secretary, William M. Jones, Greensboro Univ. of Md., 1903.	1903	1903
Alford, Alex. E. B., Greensboro Columbia Univ., N. Y., 1909.	1909	1909
Ashworth, W. C., Greensboro P. and S., Balt., 1892.	1892	1892
Austin, J. W., High Point Jefferson Med. Coll., Phila., 1910.	1910	1913
Banner, C. W., Greensboro Univ. of Md., 1899.	1899	1901
Battle, J. T. J., Greensboro P. and S., Balt., 1884.	1884	1889
Beall, L. G., Greensboro N. C. Med. Coll., 1906.	1906	1906
Beall, W. P. (Hon.), Greensboro Jefferson Med. Coll., 1879.	1879	1879
Bowman, H. P., Greensboro Univ. of Tenn., 1894.	1894	----
Boyles, J. H., Greensboro P. and S., Balt., 1903.	1903	1903
Braddy, W. H., Greensboro Univ. of N. C., 1909.	1909	1913
Burrus, J. T., High Point Balt. Med. Coll., 1901.	1898	1898
Coe, S. S., High Point Univ. Coll. of Med., Va., 1911.	1912	1912
Cole, W. F., Greensboro Johns Hopkins, 1909.	1909	1909
Dees, R. E., Greensboro Univ. of Md., 1906.	1908	1908
Dees, R. O., Greensboro Univ. of Md., 1906.	1906	1907
Dick, J. V., Gibsonville Univ. of N. C., 1907.	1907	1908

Name and Address.	*Licensed.*	*Joined State Society.*
Dodson, H. H., Greensboro	1885	1886
Med. Coll. of Va., 1882.		
Duncan, G. F., High Point	1898	1907
Balt. Univ., 1898.		
Fields, B. T., Greensboro	----	----
Fortune, A. F., Greensboro	1900	1904
Univ. Coll. of Med., Va., 1900.		
Foscue, J. E., Jamestown	----	----
Fox, M. F. (Hon.), Guilford College	1885	1885
P. and S., Balt., 1881.		
Gilmer, C. S., Greensboro, R. F. D. 6	1891	1894
Univ. of N. Y., 1891.		
Gordon, J. R., Jamestown	----	----
Gove, A. M., Greensboro	1894	1894
Woman's Med. Coll., N. Y., 1892.		
Grayson, C. S., High Point	1907	1908
George Washington Univ., 1906.		
Harrison, Edmund, Greensboro	1900	1900
Univ. of Md., 1896.		
Hiatt, H. B., High Point	----	----
Hilton, J. J., Greensboro	1889	1904
Univ. of Md., 1886.		
Holt, W. T., McLeansville	1890	1890
Univ. of Tenn., 1890.		
Hyatt, F. C., Greensboro	1907	1907
Jefferson Med. Coll., Phila., 1907.		
Jackson, W. L., Trinity	1912	1913
N. C. Med. Coll., 1912.		
Jarboe, Parran, Greensboro	1906	1906
Georgetown Univ., 1905.		
Jordan, G. E. (deceased), Greensboro	1891	1904
P. and S., Balt., 1891.		
Knight, W. P., Greensboro	1898	1898
Balt. Med. Coll., 1898.		
Ledbetter, A. E., Greensboro	1888	----
Univ. of Md., 1888.		
Long, J. W. (Hon.), Greensboro	1884	----
Vanderbilt Univ., 1884.		
Mann, I. T., High Point	----	----
McAnally, W. J., High Point	1896	----
Balt. Med. Coll., 1897.		
McCain, H. W., High Point	1909	1911
Univ. of Md., 1909.		
Meadows, W. J., Greensboro	1899	1904
Med. Coll. of Ala., 1894.		
Mebane, W. N., Greensboro	----	----
Michaux, E. R., Greensboro	1889	1904
Univ. of N. Y., 1889.		
Miles, Mary S., Greensboro	----	----
Moore, Charles E., Greensboro	1909	----
Jefferson Med. Coll., Phila., 1907.		
Norman, G. W., Greensboro	1896	1896
Balt. Med Coll., 1896.		
Ogburn, H. H., Greensboro	----	----
Reitzel, C. E., High Point	1902	1902
P. and S., Atlanta, 1902.		
Reives, C. R., Greensboro	1914	1914
Univ. of the South, 1906.		

Name and Address.	*Licensed.*	*Joined State Society.*
Reives, J. T., Greensboro	1891	1892
Louisville Med. Coll., 1891.		
Reives, W. P., Greensboro	1905	----
Univ. of the South, 1903.		
Richardson, W. J., Greensboro	1889	1904
Jefferson Med. Coll., Phila., 1869.		
Roberson, Charles, Greensboro	1897	----
Long Island College Hospital, 1897.		
Schoonover, R. A., Greensboro	1906	1912
Univ. of Md., 1905.		
Smith, A. T., Greensboro	1910	1913
Med. Coll. of Va., 1908.		
Spoon, O. A., Revolution	----	----
Spoon, O. S., Greensboro	1908	----
N. C. Med. Coll., 1908.		
Stanton, D. A., High Point	1887	1894
Vanderbilt Univ., 1887.		
Tankersley, J. W., Greensboro	1906	1906
Jefferson Med. Coll., 1906.		
Taylor, F. R., High Point	----	----
Turner, J. A., High Point	1889	1891
Louisville Med. Coll., 1886.		
Turner, J. P., Greensboro	1897	1904
Univ. of Md., 1896.		
Tyson, T. F., Pleasant Garden	----	----
Whitaker, A. C., Julian	1903	----
Univ. of Tenn., 1903.		
Williams, B. B., Greensboro	1886	----
Univ. of Md., 1883.		
Williams, J. A., Greensboro	1898	1898
Univ. of Va., 1898.		
Williams, John D., Guilford	----	----
Wilson, A. R. (Hon.), Greensboro	1882	----
Jefferson Med. Coll., Phila., 1882.		
Wilson, N. G., Summerfield	----	----

HALIFAX COUNTY SOCIETY.

President,	----	----
Secretary, A. S. Harrison, Enfield	1888	1898
Univ. of Md., 1888.		
Adkins, E. H., Rosemary	1907	----
Univ. of Md., 1905.		
Irwin, H. C., Roanoke Rapids	1907	----
Univ. of Md., 1905.		
Long, T. W. M., Roanoke Rapids	1909	----
Univ. Coll. of Med., Va., 1908.		
Nicholson, B. M., Ringwood	1910	1913
Univ. Coll. of Med., Va., 1910.		
Register, F. M., Tillery	1891	1904
Kentucky School of Med., 1893.		
Smith, Oscar F., Scotland Neck	1899	1899
Univ. Coll. of Med., Va., 1899.		

HARNETT COUNTY SOCIETY.

President, J. W. McLean, Godwin	1902	1902
N. C. Med. Coll., 1902.		
Secretary, W. P. Holt, Duke	1895	1901
Jefferson Med. Coll., Phila., 1895.		

Name and Address.	*Licensed.*	*Joined State Society.*
Arnold, L. J., Lillington N. C. Med. Coll., 1905.	1905	1905
Barefoot, M. L., Dunn Univ. of Md., 1911.	1911	1912
Denning, O. L., Dunn Jefferson Med. Coll., Phila., 1889.	1889	1904
Halford, J. W., Lillington Columbia Univ., 1904.	1905	1905
Hicks, I. F., Dunn N. C. Med. Coll., 1902.	1902	1904
Highsmith, Charles, Dunn Balt. Med. Coll., 1898.	1898	1898
Hudson, W. L., Dunn Ky. School of Med., 1876.	1883	1894
Lee, S. P. J., Dunn Maryland Med. Coll., 1904.	1904	1905
McKay, J. F., Buies Creek S. C. Med. Coll., 1884.	1885	1904
Melvin, W. C., Linden Univ. Coll. of Med., Va., 1900.	1900	1905
Moore, F. T., Benson P. and S., Balt., 1885.	1885	1904
Roberts, H. C., Coats Tulane Univ., 1912.	1912	1913
Sexton, C. H., Dunn Univ. of Md., 1890.	1890	1904
Smith, F., Linden S. C. Med. Coll., 1868.	----	1905
Warren, R. L., Dunn Tulane University, 1911.	1911	1912

HAYWOOD COUNTY SOCIETY.

President, ----	----	----
Secretary, J. R. McCracken, Waynesville N. C. Med. Coll., 1902.	1902	1903
Allen, R. L., Waynesville Univ. of Md., 1885.	1885	1899
Davis, F. M., Canton Vanderbilt Univ., 1894.	1894	1904
Greenwood, B. H., Waynesville Balt. Med. Coll., 1893.	1894	1906
McMahan, J. W., Cresmont Tennessee Med. Coll., 1900.	1912	1913
Reynolds, T. F., Canton N. C. Med. Coll., 1904.	1904	1904
Russell, J. M., Canton Univ. of Nashville, 1911.	1911	1911
Stringfield, S. L., Waynesville Jefferson Med. Coll., Phila., 1905.	1905	1906
Stringfield, Thomas, Waynesville Vanderbilt Univ., 1898.	1898	1899
Way, J. Howell, Waynesville Vanderbilt Univ., 1886.	1885	1887
Wilson, J. E., Canton, R. F. D. Louisville Med. Coll., 1876.	before 1885	1903

HENDERSON-POLK COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President, E. M. Salley, Saluda	1905	1906
Univ. of Md., 1905.		
Secretary, E. Pierce Mallet, Hendersonville	1913	1913
Long Island Med. Coll., 1889.		
Brown, J. S., Hendersonville	1894	1894
Northwestern Univ., 1893.		
Cliff, B. F., Flat Rock	1914	1915
Cranford, J. F., Hendersonville	1909	1910
N. C. Med. Coll., 1909.		
Dixon, G. E., Hendersonville	1903	1903
P. and S., St. Louis, 1903.		
Drafts, A. B., Hendersonville	1899	1903
Univ. of Va., 1896.		
Edgerton, J. L., Hendersonville	----	1890
Univ. of Md., 1877.		
Greenwood, S. E., Fletcher, R. F. D.	1903	1904
Tenn. Med. Coll., 1902.		
Howe, W. H., Hendersonville	1907	1908
Med. Coll. of S. C., 1906.		
Kirk, W. R., Hendersonville	1901	1903
Centr. Univ. of Ky., 1890.		
Morse, L. B., Hendersonville	1901	1908
Chicago Homeopathic Coll., 1897.		
Palmer, M. C., Tryon	1911	1913
Med. Coll. of S. C., 1910.		
Summer, T. W., Fletcher	1910	1910
Jefferson Med. Coll., Phila., 1910.		

HERTFORD COUNTY SOCIETY.

President,	----	----
Secretary,	----	----
Burbage, T. I., Como	1885	1905
Memphis Hosp. Coll. Med., 1883.		
Greene, A. W., Ahoskie	1904	1905
Univ. Coll. of Med., Va., 1904.		
Kellum, W. D., Ahoskie, R. F. D. 3	1877	1902
P. and S., Balt., 1877.		
Pollard, W. B., Winton	1903	1905
Univ. of Pa., 1899.		

IREDELL-ALEXANDER COUNTY SOCIETY.

President, F. A. Carpenter, Statesville	1906	1906
N. C., Med. Coll., 1906.		
Secretary, John E. McLaughlin, Statesville	1886	1896
Univ. of Md., 1886.		
Adams, M. R., Statesville	1884	1884
Univ. of Md., 1878.		
Anderson, T. E. (Hon.), Statesville	1878	1878
Jefferson Med. Coll., Phila., 1878.		
Bell, A. E., Mooresville	1897	1904
Univ. of Md., 1889.		
Campbell, A., Statesville	1878	1878
Univ. of Md., 1878.		
Crouch, T. D., Stony Point	1909	1915
N. C. Med. Coll., 1909.		

Name and Address.	*Licensed.*	*Joined State Society.*
Davis, J. W., Statesville	1913	1915
Univ. of Pa., 1913.		
Gibson, L. A., Statesville	1913	1915
N. C. Med. Coll., 1913.		
Gilmore, W. D., Mooresville	1904	1910
Univ. of N. C., Med. Dept., 1903.		
Hall, E. A., Statesville	----	1904
Univ. of Md., 1868.		
Jurney, P. C., Turnersburg	1901	1903
Med. Coll. of Va., 1901.		
Leeper, D. H., Hiddenite	1906	1913
N. C. Med. Coll., 1906.		
Little, E. E., Statesville, R. F. D. 6	1912	1915
N. C. Med. Coll., 1912.		
Long, H. F., Statesville	1892	1903
Univ. of Md., 1892.		
Sherrill, C. L., Statesville	----	----

JACKSON COUNTY SOCIETY.

President, A. A. Nichols, Sylva	1904	1904
Univ. of Nashville, 1898.		
Secretary, Ed. J. Bryson, Cullowhee	1914	1915
Bennett, Chicago, Ill., 1913.		
Candler, Charles Z., Sylva	1901	1912
P. and S., Atlanta, 1901.		
Hooper, D. D., Sylva	1905	1905
Univ. Coll. of Med., Va., 1905.		
Nichols, A. S., Sylva	1907	1907
Tenn. Med. Coll., 1905.		

JOHNSTON COUNTY SOCIETY.

President, J. C. Grady, Kenly	1887	1905
P. and S., Balt., 1887.		
Secretary, Oscar Eason, Princeton	1910	1910
Univ. of N. C., 1910.		
Coleman, G. S., Kenly	1907	1908
Med. Coll. of Va., 1907.		
Griffin, J. A. (Hon.), Clayton	----	1905
P. and S., Balt., 1881.		
Griffin, T. A., Clayton	1912	1912
Univ. of Md., 1912.		
Hinnant, Melford, Micro	1912	1912
Univ. of Md., 1912.		
Hocutt, B. A., Clayton	1906	1907
Univ. of N. C., 1906.		
Hooks, T., Smithfield	1901	1903
Med. Coll. of Va., 1901.		
McLemore, G. A., Clayton	1906	1907
Univ. of N. C., 1900.		
Munns, L. A., Smithfield	1888	1904
P. and S., Balt., 1888.		
Myerburg, I. W., Pine Level	1907	1908
Jefferson Med. Coll., Phila., 1907.		
Noble, R. J. (Hon.), Selma	1879	1878
Ky. Med. School, 1875.		

Name and Address.	*Licensed.*	*Joined State Society.*
Parker, G. E., Benson	----	1904
P. and S., Balt., 1885.		
Person, J. B., Selma	1897	1900
Med. Coll. of Va., 1897.		
Rose, A. H., Smithfield	1906	1906
Jefferson Med. Coll., Phila., 1906.		
Utley, H. H., Benson	1906	1906
Balt. Med. Coll., 1906.		
Vick, G. D., Selma	1906	1906
Jefferson Med. Coll., Phila., 1906.		
Wharton, L. D., Smithfield	1893	1894
Tulane University, 1893.		
Wilmerding, W. E., Selma	----	----
Woodard, A. G., Princeton	1907	1907
Univ. of N. C., 1907.		
Young, J. J., Clayton	1896	1904
P. and S., Balt.		

LEE COUNTY SOCIETY.

President, W. A. Monroe, Sanford	1886	1888
Univ. of Md., 1886.		
Secretary, Lynn McIver, Sanford	1902	1902
Univ. of Ky., 1901.		
McIver, E. M., Jonesboro	1908	1908
Univ. of N. C., 1908.		
Monroe, J. P., Sanford	1901	1901
P. and S., Balt., 1901.		
Rosser, R. G., Broadway	1909	1911
N. C. Med. Coll., 1909.		
Snipes, E. P., Jonesboro	1892	1892
Vanderbilt Univ., 1890.		
Watson, Leon, Broadway	1900	1904
N. C. Med. Coll., 1900.		

LENOIR COUNTY SOCIETY.

President, F. A. Whitaker, Kinston	1871	1884
Univ. of Pa., 1875.		
Secretary, Z. V. Moseley, Kinston	1913	----
Univ. Coll. of Med., Va., 1913.		
Denny, W. W. (Hon.), Pink Hill	----	----
Hardy, I. M., Washington	1902	1902
Med. Coll. of Va., 1901.		
Hargrove, W. F., Kinston	1901	1901
Univ. of Md., 1901.		
Kornegay, George E., Kinston	----	----
McNairy, C. B., Lenoir	1893	1907
P. and S., Balt., 1893.		
Monk, H. D., Trenton	1896	----
Med. Coll. of Va., 1896.		
Parrott, A. D., Kinston	1906	1906
Univ. Coll. of Med., Va., 1906.		
Parrott, J. M., Kinston	1895	1895
Tulane Univ., 1895.		
Parrott, W. T., Kinston	1895	1895
Tulane Univ., 1895.		
Tull, Henry (Hon.), Kinston	1876	1876
Univ. of Pa., 1876.		

Name and Address.	*Licensed.*	*Joined State Society.*
Whitaker, F. S., Kinston	1913	1913
Balt. Med. Coll., 1913.		
Whitaker, R. A. (Hon.), Kinston	1885	1885
P. and S., Balt., 1885.		

LINCOLN COUNTY SOCIETY.

President, L. A. Crowell, Lincolnton	1892	1892
Balt. Med. Coll., 1892.		
Secretary, C. D. Thompson, Lincolnton	1901	1904
Univ. of Tenn., 1901.		
Abernethy, H. N., Denver	1894	1898
Louisville Med. Coll., 1894.		
Bandy, W. G., Maiden	1912	1914
Vanderbilt Univ., 1908.		
Costner, G. H., Lincolnton	1902	1907
Univ. of Md., 1901.		
Gamble, J. R., High Shoals	1911	----
Univs. of Nashville and Tenn., 1911.		
Hoover, C. H., Crouse	1903	1904
Balt. Med. Coll., 1903.		
Jacocks, W. P., Kingstown, St. Vincent, B. W. I.	----	----
Killian, R. B., Lincolnton	1885	1904
Louisville Med. Coll., 1885.		
Kizer, W. C., Reepsville	----	1904
Southern Med. Coll., Ga., 1889.		
Matthews, W. S., Cleveland Mill	----	----
Sloan, H. L., Lincolnton	1913	----
Univ. of Pa., 1911.		
Taylor, B. C., Stanley	1902	1907
Univ. of Md., 1901.		
Wright, J. B., Raleigh	1899	1899
Univ. Coll. of Med., Va., 1899.		

MACON-CLAY COUNTY SOCIETY.

President, S. H. Lyle, Franklin	1881	1881
Univ. of Nashville, 1881.		
Secretary, W. A. Rogers, Franklin	1898	1898
Univ. of Nashville, 1898.		
Killian, P. B., Hayesville	----	----
Lapham, Mary E., Highlands	1906	1906
Woman's Med. Coll. of Pa., 1900.		
Siler, F. L., Franklin	1898	1898
Univ. of Nashville, 1897.		

MADISON COUNTY SOCIETY.

President, S. B. Woody, Spring Creek	1898	1898
Vanderbilt Univ., 1892.		
Secretary,	----	----
Baird, J. H., Mars Hill	1885	1885
Baird, J. W., Mars Hill	----	----
Burnett, J. E., Mars Hill	----	----
Frisbee, T. J., Barnard	----	1904
Moore, J. N., Marshall	1905	1908
Univ. of N. C., 1905.		

Name and Address.	*Licensed.*	*Joined State Society.*
Packard, G. H., White Rock	----	----
Peck, E. J., Hot Springs	----	1907
Vanderbilt Univ., 1879.		
Roberts, Frank, Marshall	1892	1902
Jefferson Med. Coll., Phila., 1892.		
Robinson, W. F., Mars Hill	----	----
Tilson, J. C., Marshall	1885	1904
Tenn. Medical College, 1892.		

MARTIN COUNTY SOCIETY.

President, E. M. Long, Oak City	1909	1909
Univ. of Md., 1909.		
Secretary, W. E. Warren, Williamston	1893	1894
P. and S., N. Y., 1889.		
Fleming, M. J., Hamilton	1906	1906
Jefferson Med. Coll., Phila., 1906.		
Hargrove, R. H., (Hon.), Robersonville	1879	1879
Univ. of Md., 1877.		
Knight, J. B. H., Williamston	1885	1891
P. and S., Balt., 1885.		
Long, B. L., Hamilton	1883	1882
Univ. of Md., 1881.		
Nelson, R. J., Robersonville	1890	1893
Louisville Med. Coll., 1890.		
Rhodes, J. S., Williamston	1906	1906
Med. Coll. of Va., 1906.		
Saunders, J. H., Williamston	1905	1905
Univ. Coll. of Med., Va., 1905.		
Smithwick, J. E., Jamesville	1897	1897
Med. Coll. of Va., 1897.		
Ward, J. E., Robersonville	1904	1904
Univ. of Md., 1904.		
Ward, V. A., Robersonville	1908	1908
Jefferson Med. Coll., Phila., 1908.		
Williams, J. W., Everitts	1906	1906
Univ. of Md., 1906.		
York, H. B., Williamston	1906	1906
P. and S., Balt., 1906.		

McDOWELL COUNTY SOCIETY.

President, D. M. McIntosh, Old Fort	1907	1908
Med. Coll. of Va., 1904.		
Secretary, J. F. Jonas, Marion	1903	1903
Balt. Med. Coll., 1903.		
Ashworth, B. L., Marion	1893	1895
P. and S., Balt., 1893.		
Justice, G. B., Marion	1907	1907
P. and S., Atlanta, 1906.		
Kirby, G. S., Marion	1896	1904
Univ. Coll. of Med., Va., 1897.		
Morphew, M. F., Marion	1883	1893
P. and S., Balt., 1883.		
Taylor, M. M., Nebo	----	----

MECKLENBURG COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President, J. H. Tucker, Charlotte Univ. of Va., 1899.	1899	1899
Secretary, O. B. Ross, Charlotte Univ. of Pa., 1909.	1909	1911
Abernethy, J. S., Charlotte, R. F. D. 6 P. and S., Balt., 1878.	1878	1878
Alexander, Annie L., Charlotte Woman's Med. Coll., Pa., 1884.	1885	1885
Alexander, J. R., Charlotte Univ. of Md., 1894.	1894	1898
Allan, William, Charlotte P. and S., Balt., 1906.	1906	1908
Ashe, J. R., Charlotte Columbia Univ., 1911.	1915	1915
Austin, F. DaC., Charlotte N. C. Med. Coll., 1907.	1907	1907
Austin, J. A., Charlotte Jefferson Med. Coll., Phila., 1882.	1882	1887
Barron, A. A., Charlotte Vanderbilt Univ., 1909.	1910	1909
Boyette, E. C., Charlotte Balt. Med. Coll., 1893.	1898	1898
Brenizer, A. G., Charlotte Johns Hopkins and Univ. Heidelberg, 1908.	1910	1909
Caldwell, J. H., Charlotte N. C. Med. Coll., 1914.	1914	1914
Cauthen, R. S. (deceased), Charlotte Balt. Med. Coll., 1902.	1911	1911
Clifford, J. S., Charlotte George Washington Univ., 1906.	1907	1908
Craven, W. W., Huntersville	----	----
Crowell, A. J., Charlotte Univ. of Md., 1893.	1892	1893
Crowell, S. M., Charlotte Univ. of Md., 1895.	1895	1895
Davidson, J. E. S., Charlotte Univ. of Md., 1894.	1898	1898
DeArmon, J. McC., Charlotte Univ. of Md., 1886.	1886	1886
Faison, I. W. (Hon.), Charlotte Bellevue Med. Coll., 1878.	1878	1878
Faison, Yates, Charlotte Harvard Univ., 1910.	1910	1912
Fetner, L. M., Charlotte N. C. Med. Coll., 1914.	1914	1915
Gibbin, R. L., Charlotte Jefferson Med. Coll., Phila., 1892.	1891	1893
Graham, W. A., Charlotte P. and S., N. Y., 1888.	1889	1890
Henderson, S. M., Charlotte, R. F. D. Univ. of Md., 1894.	1894	1904
Herron, A. M., Charlotte S. C. Med. Coll., 1882.	1884	1884
Hovis, L. W., Charlotte N. C. Med. Coll., 1904.	1904	1904
Hunter, E. R., Charlotte Louisville Med. Coll., 1896.	1897	1897

Name and Address.	*Licensed.*	*Joined State Society.*
Hunter, L. W., Charlotte	1894	1904
Univ. of Md., 1894.		
Hunter, Myers, Charlotte	1906	1906
Georgetown Univ., 1905.		
Irwin, J. R. (Hon.), Charlotte	1882	1882
Univ. of Md., 1879.		
King, P. M., Charlotte	1902	1904
Bellevue Med. Coll., 1902.		
Lafferty, R. H., Charlotte	1906	1906
N. C. Med. Coll., 1906.		
Leinbach, R. F., Charlotte	1907	1909
Univ. of Pa., 1907.		
MacConnell, J. W., Davidson	1908	1908
Univ. of Md., 1907.		
Matheson, J. P., Charlotte	1902	1902
N. C. Med. Coll., 1902; Univ. of Md., 1905.		
Matthews, J. C., Charlotte	1913	1914
N. C. Med. Coll., 1913.		
McKay, H. W., Charlotte	1911	1912
Jefferson Med. Coll., Phila., 1910.		
McLaughlin, S. C., Charlotte	1896	1903
Univ. of Md., 1896.		
Meisenheimer, C. A. (Hon.), Charlotte	1882	1882
Misenheimer, C. A. (Hon.), Charlotte	1882	1882
Moore, A. W., Charlotte	1912	1912
Univ. of Va., 1901; Univ. of N. Y., 1902.		
Moore, Oren, Charlotte	1911	1911
N. C. Med. Coll., 1911.		
Munroe, J. P., Charlotte	1887	1887
Univ. of Va., 1886.		
Myers, John Q., Charlotte	1904	1904
N. C. Med. Coll., 1904.		
Nalle, B. C., Charlotte	1905	1905
Univ. of Va., 1903.		
Newell, L. B., Charlotte	1905	1905
Univ. of N. C., 1905.		
Nisbet, W. O., Charlotte	1899	1899
Med. Coll. of S. C., 1889.		
Peeler, C. N., Charlotte	1906	1906
N. C. Med. Coll., 1906.		
Petrie, R. W., Charlotte	1903	1903
Univ. of Md., 1903.		
Petteway, G. H., Charlotte, R. F. D.	1913	1914
N. C. Med. Coll., 1913.		
Pharr, W. W., Charlotte	1883	1883
P. and S., Balt., 1882.		
Pressley, G. M., Charlotte	1895	1895
Jefferson Med. Coll., Phila., 1892.		
Query, R. A., Charlotte, R. F. D. 3	1907	1907
Univ. Coll. of Med., Va., 1907.		
Ranson, J. L., Pineville, R. F. D. 15	1911	1911
N. C. Med. Coll., 1911.		
Register, E. C., Charlotte	1887	1887
Univ. of N. Y., 1885.		
Reid, W. K., Charlotte	1891	1891
Univ. of N. Y., 1891.		

Name and Address.	*Licensed.*	*Joined State Society.*
Simmons, J. O., Charlotte Grant Univ., 1894.	1906	1906
Squires, J. W., Charlotte N. C. Med. Coll., 1911.	1911	1911
Strong, C. M., Charlotte Univ. of Md., 1888.	1898	1898
Summers, J. W., Charlotte N. C. Med. Coll., 1905.	1905	1910
Thompson, S. R., Charlotte N. C. Med. Coll., 1914.	1914	1915
Trippe, C. M., Charlotte N. C. Med. Coll., 1911.	1911	1911
Wakefield, H. A., Charlotte N. C. Med. Coll., 1908.	1908	1911
Wakefield, W. H., Charlotte Ky. Coll. of Med., 1890.	1891	1893
Walker, C. E., Charlotte Univ. of Md., 1891.	1891	1894
Whisnant, A. M., Charlotte P. and S., Balt., 1893.	1893	1895
Witherbee, W. D., Charlotte McGill Univ., 1899.	1905	1905
Witherspoon, B. J., Charlotte S. C. Med. Coll., 1894.	1900	1906
Wright, T. H., Charlotte Univ. of Va., 1901.	1904	1904

MITCHELL COUNTY SOCIETY.

President, C. A. Peterson, Spruce Pine N. C. Med. Coll., 1907.	1907	1908
Secretary, R. E. Stack, Bakersville N. C. Med. Coll., 1911.	1911	1912

MONTGOMERY COUNTY SOCIETY.

President, A. F. Thompson, Troy Med. Coll. of Ind., 1895.	1895	1902
Secretary, Charles Daligny, Troy Military Med. School, Paris, 1878.	1885	1902
Andrews, V. L., Mount Gilead Univ. Coll. of Med., Va., 1909.	1909	----
Armstrong, C. W., Troy Univ. of Md., 1914.	1914	1915
Bowman, E. H., Biscoe N. C. Med. Coll., 1904.	1904	1904
Dameron, E. L., Star N. C. Med. Coll., 1911.	1911	----
Dowd, J. A., Biscoe N. C. Med. Coll., 1902.	1907	1909
Hoyle, H. B., Biscoe N. C. Med. Coll., 1896.	1896	1903
Ingram, C. B., Mount Gilead Jefferson Med. Coll., Phila., 1886.	1886	1902
Shamburger, J. B., Star Univ. of Md., 1890.	1890	1892

MOORE COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President, M. L. Matthews, Cameron	1903	1903
Univ. of N. C., 1903.		
Secretary, J. H. Matthews, Vass	1907	1908
Univ. of N. C., 1907.		
Achorn, J. W., Pine Bluff	1899	----
Med. School of Maine, 1887; Bellevue Med. Coll., 1889.		
Blair, A. McN., Southern Pines	1905	1905
Univ. of N. Y., 1897.		
Davis, J. F., Glendon	1912	----
Med. Coll. of Va., 1912.		
Marr, M. W., Pinehurst	----	1915
McDonald, A. A., Jackson Springs	1905	1912
N. C. Med. Coll., 1905.		
McLeod, A. H., Aberdeen	1896	1904
Balt. Med. Coll., 1896.		
McLeod, G. M., Carthage	1885	1904
Univ. of Md., 1882.		
McMillan, J. M., Hemp	1909	1910
Atlanta Coll. of P. and S., 1909.		
Mudgett, W. C., Southern Pines	1908	1908
Univ. of Md., 1903.		
Shields, H. B., Carthage	1887	1904
Atlanta Med. Coll., 1882.		
Street, M. E., Glendon	1893	----
P. and S., Balt., 1893.		
Swett, W. P., Southern Pines	----	1901
Univ. of Vermont, 1896.		
Thompson, Fred., Pine Bluff	1912	----
Harvard Univ., 1888.		

NASH COUNTY SOCIETY.

President, D. R. Dixon, Rocky Mount	1909	----
Univ. Coll. of Med., Va., 1906.		
Secretary, W. H. Kibler, Nashville	----	----
Battle, G. C., Rocky Mount	----	----
Battle, J. P., Rocky Mount	1889	----
Univ. of Md., 1889.		
Boice, E. S., Rocky Mount	----	----
Brantley, H., Spring Hope	1888	----
Jefferson Med. Coll., Phila., 1888.		
Cutchin, Henry, Whitakers	----	----
Dean, T. J., Nashville	1910	----
Univ. of the South, 1908.		
Dew, S. B., Bailey	----	----
Ellen, C. J., Battleboro, R. F. D.	1911	----
Univ. Coll. of Med., Va., 1911.		
Kornegay, L. W., Rocky Mount	1906	1906
N. C. Med. Coll., 1906.		
Lane, J. L., Rocky Mount	1906	1906
N. C. Med. Coll., 1906.		
Marriott, H. B., Battleboro	1883	----
Missouri Med. Coll., 1883.		
Matthews, T. A., Castalia	1891	----
Univ. of Md., 1890.		
Quillen, E. B., Rocky Mount	1906	----
Univ. of Md., 1904.		

Name and Address.	*Licensed.*	*Joined State Society.*
Strickland, J. T., Nashville Univ. of Md., 1890.	1890	----
Washburn, B. E., Port-of-Spain, Trinidad, B. W. I. Univ. of Va., 1910.	1912	1913
Whitehead, J. P., Rocky Mount Univ. of Md., 1899.	1899	----

NEW HANOVER COUNTY SOCIETY.

President, J. C. Wessell, Wilmington Univ. of Md., 1900.	1900	1900
Secretary, Ernest S. Bulluck, Wilmington Univ. of Md., 1911.	1911	1911
Bellamy, R. H., Wilmington Jefferson Med. Coll., Phila., 1902.	1902	1902
Bellamy, W. J. H. (Hon.), Wilmington	----	----
Bolles, C. P., Jr., Wilmington Univ. of Va., 1897.	1908	1908
Borneman, J. H., Wilmington Jefferson Med. Coll., Phila., 1903.	1904	----
Caldwell, M. M., Wilmington Jefferson Med. Coll., Phila., 1901.	1906	1907
Cranmer, J. B., Wilmington Univ. of N. C., 1905.	1905	1906
Galloway, W. C. (Hon.), Wilmington Washington Univ., Md., 1874.	1880	1880
Green, T. M., Wilmington Univ. of Md., 1900.	1900	1903
Guin, J. L., Wilmington Tulane Univ., 1913.	1913	1913
Hall, Wright (Hon.), Wilmington	----	----
Harper, C. T., Wilmington Univ. of Md., 1893.	1893	1904
Harris, A. H., Wilmington Medico-Chirurgical, Phila., 1893.	1892	1904
Honnett, J. H., Wilmington P. and S., N. Y., 1900.	1901	1904
Koonce, S. E., Wilmington P. and S., Balt., 1896.	1896	1900
Love, W. J. (Hon.), Wilmington S. C. Med. Coll., 1861.	1861	1870
McDonald, A. D. (Hon.), Wilmington Wash. Univ., Md., 1877.	1887	1877
McMillan, W. D. (Hon.), Wilmington	----	----
Moore, H. T., Wilmington Tulane Univ., 1913.	1913	1913
Moore, W. H., Wilmington Jefferson Med. Coll., Phila., 1910.	1910	1911
Murphy, J. G., Wilmington Univ. Louisville, 1903.	1903	1905
Nesbitt, C. T., Wilmington Balt. Med. Coll., 1903.	1907	1908
Pridgen, C. L., Wilmington Jefferson Med. Coll., Phila., 1901.	1901	----
Russell, F. H., Wilmington Univ. of Md., 1893.	1893	1893
Schonwald, J. L. (Hon.), Wilmington Long Island Med. Coll., 1879.	1880	1904

Name and Address.	*Licensed.*	*Joined State Society.*
Slocum, R. B., Wilmington	1907	1908
Johns Hopkins, 1905.		
Stovall, Arnold, Wilmington	----	----
Strosnider, C. F., Wilmington	1910	1913
Univ. of Md., 1909.		
Thames, John, Wilmington	1894	1895
Louisville Med. Coll., 1894.		
Thomas, G. G. (Hon.), Wilmington	1871	1871
Univ. of Md., 1871.		
Willingham, B. J., Wilmington	1906	1906
Med. Coll. of Va., 1906.		
Wood, E. J., Wilmington	1903	1903
Univ. of Pa., 1902.		

NORTHAMPTON COUNTY SOCIETY.

President, M. Bolton, Rich Square	1885	1885
Jefferson Med. Coll., Phila., 1885.		
Secretary, P. C. Brittle, Conway	1907	1907
Univ. Coll. of Med., Va., 1907.		
Cooke, Q. H., Woodland	1905	1907
Univ. of N. C., 1905.		
Joyner, T. O., Severn	1899	1900
Univ. Coll. of Med., Va., 1899.		
Lassiter, E. W., Rich Square	1908	1908
Univ. Coll. of Med., Va., 1908.		
Lewis, H. W., Jackson	1885	1887
Univ. of N. Y., 1877.		
Lister, J. L., Jackson	1896	1909
Med. Coll. of Va., 1896.		
Naff, G. N., Garysburg	1911	----
Med. Coll. of Va., 1908.		
Parker, C. G., Woodland	1907	1909
Univ. Coll. of Med., Va., 1907.		
Stancell, R. H., Margarettsville	1865	1885
Med. Coll. of Va., 1865; Bellevue Med. Coll., 1870.		
Stephenson, M. R., Seaboard	1881	1914
Univ. of Md., 1881.		

ONSLOW COUNTY SOCIETY.

President, E. L. Cox, Jacksonville	1889	1892
Univ. of Md., 1889.		
Secretary, R. L. Daniels, Swansboro	1912	----
Med. Coll. of Va., 1912.		
Blount, F. H., Swansboro	----	----
Duffy, R. N., New Bern	----	----
Hammond, A. F., Pollocksville	1903	----
Univ. Coll. of Med., 1903.		
Hyatt, H. O., Kinston	1870	1870
Univ. of Pa., 1868.		
Nicholson, J. L. (Hon.), Richlands	1875	1880
Univ. Coll. of Med., N. Y., 1875.		
Thompson, Cyrus, Jacksonville	----	1905
Univ. of Pa., 1878.		

PAMLICO COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President, G. S. Attmore (Hon.), Stonewall Washington Univ., Md., 1870.	1870	1872
Secretary, R. E. Watts, Oriental Med. Coll. of Va., 1911.	1913	----
Dees, D. A., Bayboro Balt. Med. Coll., 1903.	1903	1903
Purdy, J. J., Oriental	----	----
McCotter, S. E., Bayboro P. and S., Atlanta.	1908	1908

PERSON COUNTY SOCIETY.

President, R. S. Baynes, Hurdle Mills P. and S., Balt., 1881.	1881	1904
Secretary, A. F. Nichols, Roxboro Univ. of N. C., 1908.	1908	1908
Baynes, R. H., Hurdle Mills Univ. of Md.	1914	1915
Bradsher, W. A., Roxboro Univ. of Md., 1904.	1904	1905
Gentry, G. W., Timberlake Univ. of N. C., 1910.	1910	1911
Long, W. T., Roxboro Balt. Med. Coll., 1905.	1905	1907
Love, B. E., Roxboro Univ. of Md., 1904.	1904	1904
Merritt, J. H., Woodsdale Univ. of N. C., 1906.	1907	1908
Nichols, C. G., Roxboro Bellevue Med. Coll., 1885.	1885	1891
Swann, J. F., Semora P. and S., Balt., 1898.	1898	1904
Warren, R. F., Prospect Hill	----	1913

PASQUOTANK-CAMDEN-DARE COUNTY SOCIETY.

President, C. B. Williams, Elizabeth City Univ. Coll. of Med., Va., 1903.	1903	1906
Secretary, R. L. Kendrick, Elizabeth City Univ. of Va., 1913.	1913	1915
Aydlett, H. T., Elizabeth City Univ. of Va., 1894.	1895	1896
Cohn, B. W., South Mills Med. Coll. of Va., 1884.	1905	1908
Fearing, Isaiah, Elizabeth City P. and S., Balt., 1896.	1896	1904
Fearing, Zenas, Elizabeth City Univ. Coll. of Med., 1901.	1901	1904
Ferebee, C. G., South Mill	----	----
Hoggard, W. A., Woodville Univ. Coll. of Med., Va., 1907.	1907	----
Johnston, W. W., Manteo N. C. Med. Coll., 1913.	1913	1915
McMullen, Oscar, Elizabeth City Univ. of Va., 1880.	1885	1889
Saliba, John, Elizabeth City Univ. of Edinburgh, Scotland.	1914	1915

Name and Address.	*Licensed.*	*Joined State Society.*
Sawyer, C. W., Elizabeth City	1885	1904
Univ. of Md., 1886.		
Sawyer, W. W., Elizabeth City	1903	1905
Univ. of Md., 1903.		
Walker, H. D., Elizabeth City	1902	1902
Univ. of Md., 1902.		
Wright, S. G., Elizabeth City, R. F. D.	----	----

PITT COUNTY SOCIETY.

President,	----	----
Secretary, M. T. Edgerton, Jr., Greenville	----	----
Basnight, T. G., Stokes	1905	1906
Univ. of Md., 1904.		
Blasely, E. Bruce, Fountain	----	----
Carter, M. W., Washington	----	----
Dixon, W. H., Ayden	1901	1901
Med. Coll. of Va., 1901.		
Frizzelle, M. T., Ayden	----	----
Garrenton, C., Bethel	1908	----
Med. Coll. of Va., 1908.		
Green, J. C., Greenville	----	----
Griffin, C. O., Bethel	1910	----
Univ. of Pa., 1910.		
Jones, C. M., Grimesland	1892	1895
Univ. of Md., 1892.		
Laughinghouse, Charles O'H., Greenville	1893	1894
Univ. of Pa., 1893.		
Moseley, H. P., Farmville	----	----
Nobles, J. E. (Hon.), Greenville	1899	1902
Jefferson Med. Coll., Phila., 1899.		
Skinner, L. C., Greenville	1901	1902
Univ. of Md., 1901.		
Whitfield, W. C., Grifton	1884	----
Univ. of Md., 1884.		

RANDOLPH COUNTY SOCIETY.

President, C. E. Wilkerson, Randleman	1908	1908
Univ. of Nashville, 1907.		
Secretary, C. A. Hayworth, Coleridge	1913	1913
Univ. of Md., 1913.		
Asbury, F. E. (Hon.), Worthville	1885	1896
S. C. Med. Coll., 1876.		
Caddell, S. W., Ramseur	----	----
Univ. of Tenn., 1892.		
Craven, F. C., Ramseur	1913	----
Univ. of Md., 1913.		
Fox, D. L., Randleman	1899	1904
Vanderbilt Univ., 1894.		
Fox, T. L., Franklinville	1899	1904
Vanderbilt Univ., 1894.		
Hubbard, C. C., Farmer	1890	1904
Jefferson Med. Coll., Phila., 1888.		
Hunter, J. V., Ashboro	1898	----
Univ. of Louisville, 1898.		
Moore, W. J., Ashboro	1893	1901
P. and S., Balt., 1893.		

Name and Address.	*Licensed.*	*Joined State Society.*
Phillips, C. H., Fullers	1893	----
Balt. Univ., 1892.		
Redding, A. H., Coleridge	1881	1884
P. and S., Balt., 1887.		
Sumner, W. J., Randleman	1894	1894
Univ. of Tenn., 1893.		
Tate, C. S., Ramseur	1896	----
Balt. Med. Coll., 1893.		

RICHMOND COUNTY SOCIETY.

President, F. J. Garrett, Rockingham	1887	----
Univ. of Md., 1889.		
Secretary, A. C. Everett, Rockingham	1897	----
Univ. of Md., 1897.		
Fowlkes, J. L., Hamlet	1903	----
P. and S., Atlanta, 1903.		
Garrett, F. B., Rockingham	1912	----
N. C. Med. Coll., 1912.		
Howell, W. L., Ellerbe, R. F. D.	1910	----
Hunter, N. C., Rockingham	1899	----
Medico-Chirurgical, Phila., 1899.		
James, W. D., Hamlet	----	----
Kinsman, H. F., Hamlet	1897	----
Univ. of Vermont, 1894.		
Ledbetter, J. M., Rockingham	1894	----
Vanderbilt Univ., 1894.		
Maness, J. M., Roberdell	----	----
McPhail, L. D., Rockingham	1900	----
Univ. of Md., 1900.		
Terry, W. C., Hamlet	1912	----
N. C. Med. Coll., 1911; Univ. of Md., 1912.		
Webb, W. P., Rockingham	----	----

ROBESON COUNTY SOCIETY.

President, J. P. Brown, Fairmont	1887	1887
Univ. of Md., 1883.		
Secretary, W. L. Grantham, Lumberton	1906	1906
N. C. Med. Coll., 1906.		
Beam, R. S., Lumberton	1912	1813
Jefferson Med. Coll., Phila., 1912.		
Croom, A. B., Maxton	1905	1905
Univ. of Md., 1905.		
Hodgin, H. H., Red Springs	1906	1906
Univ. of Md., 1905.		
Johnson, T. L., Lumberton	1905	1905
Univ. Coll. of Med., Va., 1905.		
McMillan, B. F., Red Springs	1884	1884
Univ. of Md., 1882.		
McMillan, J. L., Red Springs	1881	1881
Univ. of Md., 1881.		
McMillan, R. D., Red Springs	1911	1912
Univ. of Md., 1910.		
McPhaul, W. A., Lumberton	1905	1906
Univ. of Nashville, 1904.		
Page, B. W., Lumberton	1909	1910
Tulane Univ., 1909.		

Name and Address.	*Licensed.*	*Joined State Society.*
Reedy, Howard, Rowland Med. Coll. of S. C., 1884.	1887	1887
Schubert, L. H., Aurora Tenn. Med. Coll., 1908.	1908	1909
Smith, J. McN., Rowland Jefferson Med. Coll., Phila., 1908.	1908	1908
Stamps, Thomas, Lumber Bridge Univ. of Louisville, 1888.	1888	1888
Thompson, N. A., Lumberton Maryland Med. Coll., 1905.	1895	1904

ROCKINGHAM COUNTY SOCIETY.

President, J. W. McGehee, Reidsville Univ. of Md., 1904.	1904	1904
Secretary, J. B. Ray, Leaksville Balt. Med. Coll., 1898.	1898	1898
Abernethy, M. B., Reidsville N. C. Med. Coll., 1906.	1906	1906
Boaz, T. A., Stoneville P. and S., Balt., 1892.	1892	1892
Cummins, M. P., Reidsville Jefferson Med. Coll., 1911.	1911	1911
Ellington, Samuel, Wentworth Jefferson Med. Coll., Phila., 1877.	----	----
Flack, R. E., Spray Johns Hopkins Univ., 1913.	1913	----
Jett, E. S., Reidsville	----	----
Jett, S. G., Reidsville	----	----
Johnson, W. A., Reidsville N. C. Med. Coll., 1907.	1909	1909
Martin, S. L., Leaksville Balt. Med. Coll., 1892.	1892	1896
Matheson, R. C., Madison P. and S., Balt., 1891.	1891	----
Sweaney, John, Leaksville P. and S., Balt., 1886.	----	1888
Taylor, T. G., Leaksville Ky. School of Med., 1877.	1877	----
Tuttle, A. F., Spray N. C. Med. Coll., 1901.	1901	1901
Webb, S. E., Draper N. C. Med. Coll., 1908.	1908	1908
Wilson, W. P., Madison N. C. Med. Coll., 1908.	1908	1909

ROWAN COUNTY SOCIETY.

President,	----	----
Secretary, F. G. Sigmon, Spencer Univ. Coll. of Med., Va., 1909.	1909	1909
Boyden, W. C., China Grove N. C. Med. Coll., 1913.	1913	1914
Brawley, M. H., Salisbury N. C. Med. Coll., 1910.	1912	1914
Brawley, R. V., Salisbury Univ. Coll. of Med., Va., 1903.	1903	1904
Choate, G. W., Rockwell N. C. Med. Coll., 1909.	1909	1909

Name and Address.	*Licensed.*	*Joined State Society.*
Councill, J. B., Salisbury P. and S., Balt., 1884.	1885	1885
Crump, W. L., Salisbury Jefferson Med. Coll., Phila., 1879.	1881	1904
Currie, E. W., Salisbury N. C. Med. Coll., 1907.	1907	1907
Edwards, B. O., Landis N. C. Med. Coll., 1905.	1905	1905
Heilig, H. G., Salisbury Univ. of Md., 1899.	1899	1904
Monk, G. M., Spencer Univ. of N. C., 1908.	1908	1908
Monk, H. L., Spencer Med. Coll. of Va., 1897.	1899	1903
Ramseur, G. A., China Grove Jefferson Med. Coll., Phila., 1880.	1886	1898
Shafer, I. E., Gold Hill N. C. Med. Coll., 1914.	1914	1914
Spencer, F. B., Salisbury Univ. of N. C., 1909.	1909	1910
Stokes, J. E., Salisbury Univ. of Md., 1892.	1900	1901
Summerell, E. N. (Hon.), China Grove, R. F. D. Univ. of Pa., 1883.	1883	1883
Trantham, H. L. (Hon.), Salisbury Univ. of N. Y., 1875.	1878	1879
VanPoole, C. M. (Hon.), Salisbury P. and S., Balt., 1880.	1800	1880
West, R. M., Salisbury Med. Coll. of Va., 1900.	1900	1904
Whitehead, J. W. (Hon.), Salisbury Univ. of Pa., 1880.	1880	1800
Woodson, C. W., Salisbury P. and S., New York, 1904.	1905	1907

RUTHERFORD COUNTY SOCIETY.

President, Henry Norris, Rutherfordton Univ. of Pa., 1896.	1907	1906
Secretary, C. B. McDaniel, Rutherfordton N. C. Med. Coll., 1913.	1913	1913
Allhand, J. M., Cliffside Chicago Coll. Med. and Surg., 1910.	1910	1910
Andrews, R. M., Union Mills, R. F. D. Memphis Hosp. Med. Coll., 1904.	1904	1904
Biggs, M. H., Rutherfordton Univ. of Pa., 1897.	1907	1907
Bostic, W. C., Forest City N. C. Med. Coll., 1905.	1905	1905
Gold, C. F., Ellenboro Univ. of N. C., 1910.	1910	1910
Harrell, L. B., Caroleen Grant Univ., 1897.	1902	1904
Harris, E. B., Rutherfordton P. and S., Balt., 1876.	1885	1906
Hicks, Romeo, Henrietta, R. F. D. Southern Med. Coll., Atlanta, 1888.	----	1904
Lovelace, T. B., Henrietta, R. F. D. P. and S., Balt., 1883.	1885	1904

Name and Address.	*Licensed.*	*Joined State Society.*
Reid, G. P., Forest City Univ. Coll. of Med., Va., 1895.	1894	1899
Sellers, R. R., Rutherfordton Med. Coll. of S. C., 1914.	1914	1915
Shull, J. R., Cliffside Univ. of Pa., 1911.	1911	1912
Smart, J. B., Forest City Grant Univ., 1900.	1907	1911
Thompson, J. B., Bostic, R. F. D. 1 P. and S., Balt., 1898.	1898	1904
Thompson, W. A., Rutherfordton P. and S., Balt., 1885.	1895	1904
Twitty, J. C., Rutherfordton Balt. Med. Coll., 1892.	1892	1906
Wiseman, C. B., Henrietta P. and S., Balt., 1902.	1902	1902

SAMPSON COUNTY SOCIETY.

President, Henry Sloan, Ingold S. C. Med. Coll., 1881.	1885	1885
Secretary, G. M. Cooper, Clinton Univ. Coll. of Med., Va., 1905.	1905	1905
Crumpler, Paul, Clinton Univ. of Tenn., 1907.	1907	1907
Hollingsworth, E. T., Ivanhoe N. C. Med. Coll., 1912.	1912	1915
Holmes, Frank H. (deceased), Clinton Univ. of Md., 1895.	1895	1895
Kerr, J. D., Jr., Clinton Univ. of Md., 1908.	1908	1909
Matthews, J. O., Clinton Univ. Coll. of Med., Va., 1897.	1897	1898
McLean, R. H., Dunn, R. F. D. 6 P. and S., Balt., 1882.	1882	1887
Sikes, G. L., Salemburg Univ. Coll. of Med., Va., 1900.	1900	1900
Stevens, J. A., Clinton Jefferson Med. Coll., Phila., 1883.	1883	1883
Taylor, W. I., Kerr N. C. Med. Coll., 1902.	1904	1905
Turlington, H. C., Cooper, R. F. D. Univ. Coll. of Med., Va., 1913.	1913	1914
Underwood, O. E., Roseboro Univ. Coll. of Med., Va., 1909.	1909	1910
Wilson, R. B., Newton Grove Ky. School of Med., 1889.	1889	1904

SCOTLAND COUNTY SOCIETY.

President, G. D. Everington, Laurinburg N. C. Med. Coll., 1899.	1898	1898
Secretary, Peter McLean, Laurinburg Univ. of Md., 1906.	1907	1907
Erwin, E. W., Laurinburg Med. Coll. of S. C., 1912.	1912	1913
Gibson, J. S., Gibson Univ. of Md., 1905.	1905	1905

Name and Address.	*Licensed.*	*Joined State Society.*
James, W. D., Laurinburg	1908	1908
Jefferson Med. Coll., Phila., 1908.		
John, P., Laurinburg	1897	1904
Univ. of Md., 1897.		
Livingstone, Everitt	1912	1912
Univ. of Md., 1912.		
McLean, Allen, Wagram	1908	1908
Univ. of Md., 1908.		
Pate, W. T., Gibson	1895	1895
P. and S., Balt., 1895.		
Prince, D. M. (Hon.), Laurinburg	1871	1878
S. C. Med. Coll., 1871.		
Shaw, W. D., Wagram	----	----
Wilcox, J. W., Laurel Hill	1906	1906
Univ. of N. C., 1906.		

STANLY COUNTY SOCIETY.

President, T. A. Hathcock, Norwood	1893	1904
Univ. of Md., 1893.		
Secretary, J. C. Hall, Albemarle	1899	1899
Univ. Coll. of Med., Va., 1890.		
Allen, J. A., New London	1901	1906
Univ. Coll. of Med., Va., 1901.		
Anderson, J. N., Albemarle	1895	1895
Univ. of Md., 1895.		
Blalock, B. F., Norwood	1913	----
Univ. of Md., 1913.		
Campbell, J. I., Norwood	1898	----
Cox, B. F., Palmerville	1886	1888
P. and S., Balt., 1886.		
Dunlap, L. V., Albemarle	1909	----
Univ. of N. C., 1909.		
Hartsell, F. E., Big Lick	1895	1905
Balt. Med. Coll., 1895.		
Hill, W. J., Albemarle	1897	1904
Univ. of Md., 1897.		
Laton, J. F., Albemarle	1904	1908
N. C. Med. Coll., 1904.		
Magruder, L. F., Albemarle	1913	----
Tulane Univ., 1905.		
Price, H. L., Locust	1914	1915
N. C. Med. Coll., 1914.		
Whitley, D. P., Albemarle	1890	1890
Univ. of Md., 1889.		

STOKES COUNTY SOCIETY.

President, J. H. Ellington, Sandy Ridge	1885	1904
P. and S., Balt., 1872.		
Secretary, W. V. McCanless, Danbury	----	1904
P. and S., Balt., 1888.		
Hill, L. H. (Hon.), Germanton	1877	1877
Jefferson Med. Coll., Phila., 1861.		
Jones, A. G., Walnut Cove	1894	1904
Univ. of N. Y., 1868.		

Name and Address.	*Licensed.*	*Joined State Society.*
Kreiger, O. R., King	1911	1915
Med. Coll. of Va., 1911.		
Leak, J. J., Dan River	----	1904
Univ. Coll. of Med., Va., 1901.		
McCanless, W. L., Danbury	1893	1904
Univ. of N. Y., 1893.		
Moir, S. A., Francisco	----	----
P. and S., Balt., 1888.		
Moore, W. B., Smith	1893	1904
P. and S., Balt., 1893.		
Neal, J. W., Meadows	1887	1904
P. and S., Balt., 1889.		
Phillips, M. D., Dalton	1881	1904
Univ. of N. Y., 1881.		
Slate, W. C., Danbury	1903	----
Univ. of Tenn., 1903.		
Tuttle, R. G., Walnut Cove	1909	1912
N. C. Med. Coll., 1909.		

SURRY COUNTY SOCIETY.

President, J. B. Smith, Pilot Mountain	1885	1896
P. and S., Balt., 1885.		
Secretary, H. B. Rowe, Mount Airy	1910	1912
Univ. of Md., 1910.		
Absher, D. C., Henderson	1909	1910
Univ. of Md., 1909.		
Ashby, T. B., Mount Airy	1885	1896
P. and S., Balt., 1885.		
Baird, C. A., Mount Airy	1909	1909
N. C. Med. Coll., 1904.		
Flippin, J. M., Mount Airy	1884	1893
P. and S., Balt., 1884.		
Flippin, R. E. L., Pilot Mountain	1897	1897
Balt. Med. Coll., 1892.		
Flippin, S. T., Siloam	1898	1898
N. C. Med. Coll., 1898.		
Hollingsworth, E. M., Mount Airy	1886	1904
P. and S., Balt., 1886.		
Hollingsworth, R. E., Mount Airy	1898	1898
Univ. Coll. of Med., Va., 1898.		
Irvin, S. S., Mount Airy	1912	1915
Univ. of Va.		
Lovill, R. J., Dobson	1910	1910
Univ. of Md., 1910.		
Martin, John H., Rockford, R. F. D. 1	1904	----
Univ. of Nashville, 1903.		
Ring, J. W., Elkin	1885	1904
P. and S., Balt., 1880.		
Reece, J. M., Elkin	----	1904
P. and S., Balt., 1886.		
Royall, M. A., Elkin	1885	1891
P. and S., Balt., 1885.		
Taylor, W. S., Mount Airy	1874	1894
Jefferson Med. Coll., Phila., 1874.		
Wellborn, W. R., Elkin	1908	1908
N. C. Med. Coll., 1905.		
Woltz, J. L., Mount Airy	1902	1902
Southern Med. Coll., Ga., 1897.		

TRANSYLVANIA COUNTY SOCIETY.

Name and Address.	*Licensed.*	*Joined State Society.*
President, C. W. Hunt, Brevard P. and S., Balt., 1880.	1880	1903
Secretary, E. S. English, Brevard Univ. of the South, 1901.	1902	1902
Cheatham, Goode, Brevard N. C. Med. Coll., 1895.	1895	1896
Lyday, A. E., Penrose Tenn. Med Coll., 1891.	1909	1900
Lyday, C. E., Rosman Atlanta Med. Coll., 1910.	1911	1911
Wallis, W. J., Brevard P. and S., Balt., 1892.	1892	1903

UNION COUNTY SOCIETY.

President, R. L. Payne, Monroe Tulane Univ., 1911.	1911	1912
Secretary, H. D. Stewart, Monroe Univ. of Md., 1898.	1898	1898
Armfield, Romulus, Marshville Med. Coll. of Va., 1881.	1883	1904
Ashcraft, J. E., Monroe Univ. of N. Y., 1887.	1887	1888
Blair, J. M., Monroe Louisville Med. Coll., 1887.	1886	1886
Blair, M. P., Marshville Med. Coll. of Va., 1895.	1895	1895
Boger, D. T., Unionville N. C. Med. Coll., 1906.	1906	1906
Eubanks, J. B., Monroe Vanderbilt Univ., 1887.	1887	1904
Fitzgerald, J. Y., Indian Trail Jefferson Med. Coll., Phila., 1889.	1889	1889
Guin, L. E., Waxhaw N. C. Med. Coll., 1907.	1907	1908
Jerome, J. R., Wingate Univ. of Md., 1890.	1890	1904
Nance, G. B., Monroe Jefferson Med. Coll., Phila., 1885.	1885	1885
Neal, J. W., Monroe Univ. of N. Y. Med. Coll., 1884.	1887	1902
Perkins, D. R., Marshville Balt. Med. Coll., 1903.	1906	1906
Stevens, S. A., Monroe Univ. of Md., 1900.	1898	1898
Whitley, A. D. N., Unionville Univ. of Md., 1897.	1897	1904

VANCE COUNTY SOCIETY.

President, B. G. Allen, Henderson Bellevue Med. Coll., 1904.	1904	1904
Secretary, L. C. MacIntosh, Henderson P. and S., Atlanta, 1913.	----	----
Barr, T. E., Townsville Univ. of Va., 1908.	1914	1915

Name and Address.	*Licensed.*	*Joined State Society.*
Bass, H. H., Henderson Univ. of Md., 1899.	1899	1900
Furman, W. H., Henderson Jefferson Med. Coll., Phila., 1910.	1910	----
Fenner, E. F., Henderson Univ. of Md., 1905.	1906	1907
Gill, R. J., Henderson Univ. of Pa., 1880.	1880	1890
Harris, F. R., Henderson Univ. of Va., 1881.	1883	----
Henderson, T. B., Henderson Med. Coll. of Va., 1906.	1914	1915
Perkins, F. E., Henderson Univ. of N. Y., 1905.	1905	1911
Upchurch, R. T., Henderson Jefferson Med. Coll., Phila., 1908.	1908	----

WAKE COUNTY SOCIETY.

President, K. P. Battle, Jr. (Hon.), Raleigh Univ. of Va., 1881.	----	1889
Secretary, W. C. Horton, Raleigh P. and S., Balt., 1897.	1896	1896
Abernethy, C. O., Raleigh Univ. of N. C., 1906.	1906	1906
Anderson, Albert, Raleigh Univ. of Va., 1888.	1888	1889
Barbee, G. S., Wendell Univ. of N. C., 1910.	1910	----
Blalock, N. M., Gully's Mills	1890	1890
Buffalo, J. S., Garner Balt. Med. Coll., 1900.	1900	----
Burtt, B. W., New Hill P. and S., Balt., 1886.	1886	----
Campbell, A. C., Raleigh Univ. of N. C., 1910.	1910	1912
Carroll, E. D. D., Raleigh Woman's Med. Coll., N. Y., 1895.	1900	1900
Carstarphen, W. F., Wake Forest Jefferson Med. Coll., Phila., 1904.	1911	----
Caveness, Z. M., Raleigh Univ. of N. C., 1903.	1903	1903
Cheek, C. E., Fuquay Springs Univ. Coll. of Med., Va., 1912.	1912	----
Coppedge, T. O., Raleigh P. and S., Balt., 1908.	1909	----
Ferebee, E. B., Raleigh P. and S., Balt., 1885.	1885	----
Ferrell, John A., 61 Broadway, New York City Univ. of N. C., 1907.	1907	1908
Gibson, M. R., Raleigh Univ. of N. C., 1905.	1905	1908
Goodwin, A. W., Raleigh Bellevue Med. Coll., 1887.	1889	1889
Haywood, Hubert, Raleigh Bellevue Med. Coll., 1879.	1889	1889
Haywood, Hubert, Jr., Raleigh Univ. of Pa., 1909.	1909	----

Name and Address.	*Licensed.*	*Joined State Society.*
Horton, M. C., Raleigh Univ. Coll. of Med., Va., 1903.	1911	----
Jenkins, C. L., Raleigh N. Y. Univ. Med. Coll., 1890.	1890	----
Johnson, R. W., Apex Univ. of Tenn., 1900.	1901	1901
Jordan, T. M., Raleigh P. and S., Balt., 1881.	1881	1881
Judd, E. C., Raleigh Univ. of Pa., 1911.	1911	----
Judd, J. M., Cardenas Balt. Med. Coll., 1897.	1899	1899
Knox, A. W., Raleigh Bellevue Med. Coll., 1874.	1878	1880
Lewis, R. H. (Hon.), Raleigh Univ. of Md., 1871.	1877	1877
Lowery, J. R., Raleigh Univ. of Md., 1904.	1904	----
McCullers, J. J. L., McCullers P. and S., Balt., 1886.	1886	1886
McGee, J. W., Jr., Raleigh Bellevue Med. Coll., 1888.	1888	1888
McKee, J. S., Raleigh Univ. of Md., 1907.	1908	----
Moore, J. L., Wendell P. and S., 1886.	1886	1892
Pendleton, A. S., Raleigh Univ. of Pa., 1895.	1898	1899
Penny, J. A. J., Vanteen Univ. of N. Y., 1861.	----	1904
Rankin, W. S., Raleigh Univ. of Md., 1901.	1901	1901
Riggsbee, A. E., Morrisville Univ. of N. C., 1909.	1909	----
Ray, John E., Jr., Raleigh Cornell Univ., 1912.	----	----
Ray, O. L., Raleigh Univ. Coll. of Med., Va., 1899.	1899	1904
Rogers, J. R., Raleigh P. and S., Balt., 1886.	1886	1904
Root, A. S., Raleigh Univ. of Pa., 1911.	1911	----
Royster, H. A., Raleigh Univ. of Pa., 1894.	1894	1895
Royster, W. I. (Hon.), Raleigh Bellevue Med. Coll., 1869.	1869	1870
Shore, C. A., Raleigh Johns Hopkins, 1907.	1909	1909
Sorrell, L. P., Raleigh Med. Coll. of Va., 1875.	----	1904
Stancell, W. W., Raleigh Univ. Coll. of Med., Va., 1906.	1906	----
Strickland, J. A., Zebulon Univ. of N. C., 1909.	1909	1910
Templeton, J. M., Cary Balt. Med. Coll., 1882.	1882	1904
Thompson, S. W., Neuse Med. Coll. of Va., 1875.	----	1904

Name and Address.	*Licensed.*	*Joined State Society.*
Tucker, H. McK., Raleigh	1899	1899
Univ. of Md., 1899.		
Turner, H. G., Raleigh	1907	----
Univ. of Pa., 1906.		
Underhill, H. P., Wendell	1901	1901
Univ. Coll. of Med., 1901.		
Watson, J. B., Raleigh	1908	1908
West, Lewis, Raleigh	1912	1915
Jefferson Med. Coll., Phila., 1912.		
Whitaker, J. D., Raleigh	----	----
Wilkerson, C. B., Apex	1906	----
Univ. of N. C., 1906.		
Young, L. B., Rolesville	1886	----
P. and S., Balt., 1886.		

WARREN COUNTY SOCIETY.

President, P. J. Macon, Warrenton	1883	1883
Univ. of Md., 1883.		
Secretary, C. H. Peete, Warrenton	1906	1906
Univ. of Va., 1903.		
Holt, T. J., Wise	1904	1904
Med. Coll. of Va., 1904.		
Macon, G. H., Warrenton	1910	1910
Univ. Coll. of Med., Va., 1910.		
Norton, N. D., Norlina	1909	1911
Univ. Coll. of Med., Va., 1909.		
Oliver, A. S., Norlina	1914	1915
Jefferson Med. Coll., Phila., 1914.		
Perry, M. P. (Hon.), Macon	1884	1884
P. and S., Balt., 1884.		
Rogers, W. D., Warrenton	1913	1915
Jefferson Med. Coll., Phila., 1913.		

WASHINGTON-TYRRELL COUNTY SOCIETY.

President, M. H. Hardison, Creswell	1871	1904
Washington Univ., Md., 1870.		
Secretary, W. H. Ward (Hon.), Plymouth	1886	1900
Univ. of Md., 1881.		
Flowers, C. A., Columbia	1907	1907
P. and S., Balt., 1905.		
Gilmer, B. H., Plymouth	1910	1910
Univ. Coll. of Med., Va., 1903.		
Halsey, B. F., Roper	1894	1894
Vanderbilt Univ., 1893.		
Hassell, J. L., Creswell	1886	1908
P. and S., Balt., 1886.		
Marriner, N. B., Belhaven	1903	1908
Univ. Coll. of Med., Va., 1903.		
Speight, J. W., Roper	1885	1908
Kentucky School of Med., 1885.		
Spruill, J. L., Columbia	1895	1908
Univ. of Md., 1895.		

WAYNE COUNTY SOCIETY.

Name and Address.	Licensed.	Joined State Society.
President, M. E. Robinson, Goldsboro Wash. Univ., Balt., 1870.	----	1880
Secretary, T. L. Ginn, Goldsboro Med. Coll. of Va., 1901.	1901	1904
Brothers, J. E., Goldsboro Bellevue Med. Coll., 1874.	1874	1910
Miller, R. B., Goldsboro Med. Coll. of Va., 1898.	1900	1901
Parker, J. R., Goldsboro Univ. Coll. of Med., Va., 1901.	1901	1904
Smith, R. A. (Hon.), Goldsboro Vanderbilt Univ., 1879.	1882	1882
Smith, W. H., Mount Olive	----	----

WILKES COUNTY SOCIETY.

President,	----	----
Secretary, C. S. Sink, North Wilkesboro N. C. Med. Coll., 1912.	1912	1912
Choate, J. W., Ronda N. C. Med. Coll., 1915.	1915	1915
Pegram, R. W. S., Wilkesboro, R. F. D. 2 Balt. Med. Coll., 1892.	1894	----
Somers, L. P., Osbornville	----	----
Townsend, M. L., North Wilkesboro Indiana Med. Coll., 1906.	1912	1913
Turner, J. M., North Wilkesboro Univ. of Louisville, 1881.	1885	1904
White, J. W., Wilkesboro Jefferson Med. Coll., Phila., 1889.	1889	1890

WILSON COUNTY SOCIETY.

President, C. L. Swindell, Wilson Univ. of Md., 1909.	1909	1909
Secretary, M. M. Saliba, Wilson Balt. Med. Coll., 1897.	1910	1910
Anderson, W. H., Wilson Univ. of Va., 1902.	1904	1903
Anderson, W. S., Wilson Washington Univ., Balt., 1868.	1880	1880
Barnes, B. F., Elm City Univ. of Md., 1902.	1902	1902
Best, H. B., Wilson Univ. of N. C., 1907.	1907	1907
Dickinson, E. T., Wilson Med. Coll. of Va., 1895.	1895	1895
Eagles, C. S., Saratoga Univ. of N. C., 1909.	1909	1909
Grady, L. V., Taylors N. C. Med. Coll., 1913.	1913	1914
Harrison, J. S., Elm City Med. Coll. of Va., 1903.	1905	1908
Herring, B. S., Wilson Univ. of Mich., 1900.	1901	1901
Hoover, H. R., Wilson Balt. Med. Coll., 1891.	1892	----

Name and Address.	*Licensed.*	*Joined State Society.*
Lamm, I. W., Lucama	1899	1899
Univ. Coll. of Med., Va., 1899.		
Lewis, G. W., Wilson	1885	1892
Univ. of Md., 1886.		
Moore, C. E. (Hon.), Wilson	1875	1875
Bellevue Med. Coll., 1875.		
Moore, E. G., Elm City	1883	1890
Univ. of Md., 1883.		
Moore, K. C., Wilson	1909	1910
Univ. of Mich., 1909.		
Person, T. E., Stantonsburg	1911	----
N. C. Med. Coll., 1911.		
Powell, H. H., Stantonsburg	1911	1914
Med. Coll. of Va., 1911.		
Reed, D. H., Lucama	1904	1904
George Washington Univ., 1901.		
Smith, G. A., Black Creek	1893	1894
Louisville Med. Coll., 1887.		
Williams, A. F., Wilson	1901	1901
Univ. of Md., 1901.		

YADKIN COUNTY SOCIETY.

President, T. R. Harding, Yadkinville	1885	1906
P. and S., Balt., 1885.		
Secretary, S. A. Harding, Yadkinville	1910	1913
N. C. Med. Coll., 1910.		
Clingman, J. J., Cana	----	1904
P. and S., Balt., 1876.		
Finney, J. R., Boonville	1910	1910
N. C. Med. Coll., 1910.		
Russell, S. L., Yadkinville	1889	1904
Univ. of Tenn., 1892.		
Shore, T. W., Boonville	1899	1904
Univ. of Va., 1898.		

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TRANSACTIONS

OF THE

NORTH CAROLINA

HEALTH OFFICERS' ASSOCIATION

FIFTH ANNUAL SESSION

GREENSBORO, N. C., MONDAY, JUNE 14, 1915

OFFICERS, 1916.

President	Dr. D. E. Sevier	Asheville
Vice President	Dr. Charles T. Nesbitt	Wilmington
Secretary-Treasurer	Dr. G. M. Cooper	Raleigh

OFFICERS, 1915.

President	Dr. William M. Jones	Greensboro
Vice President	Dr. D. E. Sevier	Asheville
Secretary-Treasurer	Dr. W. S. Rankin	Raleigh

TRANSACTIONS

OF THE

North Carolina Health Officers' Association.

FIFTH ANNUAL SESSION.

Dr. W. M. Jones, President: No man or body of men should enter upon any great or important undertaking without first invoking the blessing of the Deity, so I am going to ask Dr. Robert E. Roe of Holy Trinity Church to make this invocation.

INVOCATION.

Rev. R. E. Roe: Our Father, we come before Thee, in the name of the Great Physician, to ask Thy blessing upon the work of these Thy servants. We pray Thee that they may learn more and more from His life the great lessons of sacrifice and service; that they may take the results handed down to them by a noble profession and carry them on to ever greater and greater achievements. We ask Thee especially to bless this present meeting. Give it success even beyond the desire of those gathered here, that Thy name may have the glory and humanity the benefit. We ask this and every other blessing in the name of Him Who hath taught us to say:

Our Father, Who art in Heaven, hallowed by Thy name. Thy kingdom come, Thy will be done, on earth as it is in Heaven. Give us this day our daily bread, and forgive us our trespasses, as we forgive those who trespass against us. And lead us not into temptation, but deliver us from evil, for Thine is the kingdom, and the power, and the glory, forever and ever. Amen.

ADDRESS OF WELCOME.

Hon. T. J. Murphy, Mayor of Greensboro.

Mr. Chairman, Members, Ladies and Gentlemen:

It is indeed a pleasure and privilege to welcome to our city men who are engaged in the business of promoting the health of the public. We have had in the past the honor of welcoming the State Medical Society,

the men who have the care and promotion of the individual's health, the men who are tied to their individual patients by confidential relations and the secrets of their profession, and whose transactions and professional relations are protected by the laws of the country. But this is a new era, when men enlisted and engaged in the same line of work, men listed as physicians, are bound to the public as their patients and are bound by no confidential rules of secrecy, but are urged and inspired by the great and all-pervading policy of publicity. That very keynote, that very distinction and difference between the individual physician and the health officer, voices, I think, an uprising and upheaval and revolution in the health work of this country the results of which no human mind can foresee. For we must all agree that, in order to have successful sanitation, successful public prevention of disease, the greatest publicity should be given to any community or person infected with contagion in order to prevent an epidemic.

I was just thinking this morning how to frame my remarks to these two societies in order that I might not be guilty of taxing your patience by repeating my speech on tomorrow. I know that the great majority of this society is composed of physicians, and it has been a task for me to think what to say in these two speeches.

This idea of publicity struck me as being the first distinction, and I hope that there will not be many other distinctions, because the great benefit to the public at large—to the laity, to us, the people outside of the medical profession—the greatest thing to us and the thing we appreciate most is the privilege of being asked into your meetings and having some liberty of discussion and interchange of ideas about the subject of health. Heretofore it has been held in the secrets of the greatest physicians of this country, but today you have shot out this branch, the Health Officers' Association, that is encouraging the public by giving it the benefit of your most valuable information.

You know not how the officials and the citizenship of the cities and towns of this State, who are more subject to disease by being herded together than are the people in the rural sections, really appreciate knowledge as to disease prevention and health protection.

I, therefore, take special pleasure in extending to this Health Officers' Association the warmest kind of welcome. I bid you abide as long as you will, and enjoy yourselves to the fullest extent. It is our pleasure to entertain you, but the greatest benefit we can derive from you, and you from us, will be the serious consideration of the great policies, principles, and practices that will in the future so greatly bless our city and State. Therefore, I look to this meeting and its results as most far-

reaching. The meeting of tomorrow will be great, and its deliberations far-reaching, but I look to this as the beginning—this organization but five years of age, as the greatest work the Medical Society has ever fathered or visioned: this work of communicating with the public, taking it into their confidence, warning the public of the disasters, the terrors, and dangers of disease, and at the same time informing it of means of prevention, thereby saving the public in the end.

I have not the time nor the information to go into any detailed discussion of principles and practices; that I leave with you. We hope to be benefited by your professional knowledge and your expert suggestions along these lines. We think that Greensboro is especially fortunate to have you meet within her limits, and we expect results most far-reaching and most beneficial from this meeting. However small in number, we think the power put in motion here for the conservation of humanity will exceed that of any meeting in many years. Though few, I see that you are in earnest and full of zeal. Even the laymen here have impressed upon me the idea that your association may look into the future with gleaming eyes of hope and confidently rely upon the realization of your fondest dreams.

RESPONSE TO ADDRESS OF WELCOME.

Dr. B. K. Hays, Oxford: We are not perfect strangers in Greensboro. We feel that we are fortunate to be here. We appreciate the hospitality extended to us, and the kindness of his Honor, the Mayor, in coming before us and giving us this cordial welcome. We are the ones to be felicitated on being here. We wish to thank him, and we wish to thank the citizens of Greensboro.

PRESIDENT'S ADDRESS.

Dr. William M. Jones.

Fellow Members of the North Carolina Health Officers' Association:

I know that I did not fully express my feelings when elected at our meeting in Raleigh as the presiding officer of this association. I now assure you that I have appreciated and do appreciate the honor you have so graciously conferred.

As county health officer of Guilford and as a citizen of the city of Greensboro, I want to further extend to you the welcome which has been so admirably done by our honorable mayor, and to say that we are particularly glad to have you meet here in this the Gate City of our State.

It had not been my intention to prepare an address that would necessitate being read, but, in order to confine myself more closely to that of which I would have somewhat to say, I have been compelled to reduce it to writing. This, however, is only following the general plan and precedent, which, having been set years ago, should cause one to well consider his position ere he makes any radical innovation.

If you will bear with me for a short while, I shall endeavor to bring to your attention some phases of the work that is so near and yet so far from every one here, and which is so very necessary, not only to every citizen, but to our Nation and the entire human race. The questions of public health are as vast and as full of possibilities as is the human race, and they bear a direct relationship one to the other. You increase the public health of a nation a certain per cent and *pari passu* with it you have a like advance and progress of the nation, and *vice versa.*

I am not going to enter upon the question of the work that has been and is being done by the State, for of this you will hear more clearly and concisely from those better informed. Generally speaking, the work that concerns the members of this association is divided into *urban* and *rural;* the rural work being the most important, in that it represents 80 per cent of our population.

There is a vast difference between urban and rural health work, yet, to obtain anything like satisfactory results, both must be equally successful; for, with our present-day methods of rapid transit, we have a close and frequent mingling of the two populations and, consequently, the frequent communication of communicable diseases. The urban work must be successful, and, likewise, the rural, for if one is neglected the other is compelled to suffer, or certainly so in many instances.

City methods are one thing and country methods are another. You cannot apply city methods in the country, and to apply country methods in the city only means disaster. The difference is that which exists between a monarchy and a republic. In a monarchy you enact a law and have officers to see that it is enforced. This may be compared to the city. In a republic you must wait until public sentiment shall demand the law; when, if you are fortunate, you may get it on the statute books in a decade; and here you have the rural.

Today ignorance and false ideas of personal liberty are doing more to handicap and minimize results in health work in North Carolina than are flies and mosquitoes combined; in fact, I think that these two may be considered the greatest curse to the human race, and the cause of all our woes.

Rural health work in this country is pioneer work, and each health officer is compelled to work out the problems before him upon his own

initiative without precedent or example to aid him; and I think it exceedingly expedient that the county superintendent of schools has by legislative enactment been made a member of the county board of health. Here is one instance where I most heartily indorse an "interlocking directorate."

Rural health cannot progress without the full coöperation of the departments of health and education. These must stand together and work hand in hand if results of a lasting and permanent nature are to be obtained and maintained.

The arch enemy that we are called upon to fight is preventable and unnecessary death—Death, that, unlike time and tide, can and should be postponed, and whose chief marshal is ignorance. Disease prevention, like electricity, has taken the way of least resistance, and the major part of our thought and energy has been expended upon the communicable diseases. The results have been exceedingly gratifying; but we must not let these results cloud our vision or affect our perspective in regard to the noncommunicable diseases. Human life has been increased from sixteen to seventeen years per century. This clearly demonstrates what can be done, but there is always more than one side to every question of importance. But, has this gain been without a corresponding loss? If it has, we certainly have just cause for very great rejoicing. We point with a great degree of pride to our achievements in Cuba and Panama, and well we should, for it has been grand and glorious work. I think we may well say that it is the greatest work since the discovery of antitoxin. Other work, while not so pronounced, has been of vast importance. This has been particularly so, according to statistics, as to babies. But have we been absolutely honest and just in our estimates? Have we looked upon the rose and not seen the thorn? Are there not some other figures that should be considered in computing our work? In considering the statistics of noncommunicable diseases, is there not an overdrawing of the account, and are not the figures on the wrong side of the page?

I do not want to be classed as a pessimist, and I do not think that I am, but I do want the true facts, be they as they may. Now, let us see whether we have a just cause for rejoicing, basing our deductions upon statistics. We find that chronic nephritis has increased 151 per cent in the last thirty years. Diabetes has increased 50 per cent. Appendicitis, with increase in diagnostic and surgical technique, has an increased mortality of 20 per cent in the last twelve years. Chronic noncommunicable diseases cause one-half of all deaths. It is a fact, and a very significant one, that were the inhabitants of the United States as healthy today as they were thirty years ago, one-half of the deaths for the past year would have been avoided. If chronic nephritis, appendicitis, diabetes,

etc., are increasing at so rapid a rate, there must be a cause. We know absolutely that there is a cause or causes. Would we be very far in error were we to attribute it to ignorance and the consequent race degeneracy? This is a serious accusation, but we are compelled to come to some conclusion.

Let us see, first, what statistics show us as to birth rates. We find that in the United States the rate is *decreasing* 10 per cent per year, which is more than that of any civilized country, with the exception of Australia and New Zealand. Regardless whether this be a voluntary or involuntary decrease, it does not alter the fact that it is an evidence of race degeneracy.

The so-called better class of women of New York are only capable of feeding one baby out of every four born, in the way nature intended. Then the children born to American-born wives average in numbers only a little more than half of those born to foreign-born wives when living in the same community and under similar circumstances. What is this but race suicide?

Then how shall we account for the fact that from sixteen to seventeen years have been added to the span of human life per century? This is accounted for by the fact that there has been an enormous decrease in the mortality of some of the communicable diseases, and a decrease in that of all communicable diseases, and, in addition, there has been a very perceptible increase in the per cent of babies saved from early and premature graves. This last has been due to improved methods of feeding and a more general acceptance among the medical profession of the necessity of absolute cleanliness of everything and in every way where a baby is concerned. The result has been that many weaklings have been saved, weaklings who have grown to manhood and womanhood, or, rather, who have passed the age of puberty and who are begetting their kind. They are producing offspring who are more seriously handicapped than were and are the parents—children who are not physically strong, who are not capable of withstanding the strain incident to present-day life, and who are more liable to infection than are those normally sound. The vital organs of these cannot withstand the strain of continuous labor, and ere long definite pathological changes take place and, consequently, early if not premature death.

While we are upon this dark and gloomy theme, let us follow its meanderings and see what more we can of this inferno. We have seen an increase in the mortality of chronic diseases amounting to 100 per cent in the last thirty years; a decrease in baby death rate, with the consequent passage into the adult of many physically and mentally deficient

individuals. What has been the result? Simply an increase of the physically and mentally deficient. You know that every legislature is asked to appropriate in an ever-increasing amount to maintain our State hospitals, and how difficult it is to obtain entrance for a worthy case, on account of insufficient room. It is estimated that the increase of mental defectives has been 900 per cent in the last century, and that now 1 per cent of our population are mentally defective. Something must be done to check this fearful scourge, or in time the human race will become insane—and then extinct.

Now, for those who think that this view is entirely too pessimistic; that I have become an alarmist, and have been frightened at a shadow, I want them to answer a few questions and explain a few figures.

First, let me ask if a horse breeder were to tell you that for some time he had apparently had a large per cent of colts that were defective, and upon making an accurate investigation he had been horrified to find that three out of every four, or 75 per cent, were not sound. The answer is inevitable; something is radically wrong somewhere; of this there can be no dispute. Now, I tell you that in the United States, in city and rural schools, statistics show that 75 per cent of the children are defective: 25 per cent have defective vision, 33 per cent have adenoids and enlarged glands, and 50 per cent have defective teeth. What deductions are we compelled to draw from such figures? That public health work has not decreased race degeneracy, but rather that it has aided and assisted race degeneracy by decreasing the mortality of some diseases which heretofore had carried off the physical weaklings. In other words, it has tended to set at naught the law of "the survival of the fittest." The preservation of these physical defectives increases the average longevity, and, simultaneously, decreases race stamina. Is man, created in the image of God, going to degenerate to a stage below that of the brute? Cannot these conditions of man be overcome by man? The answer is, "Yes; but will they?"

Man, by thought, effort, and time, has developed the hen from a fowl that laid only enough eggs to produce its kind to the prize winners of today which lay more eggs in one litter than some of their remote ancestors would in a couple of generations. For cosmetic effect the Chinese have been able to produce cocks with tails 18 to 20 feet long. Our cows of today are no more to be compared with the original stock than a razor-back hog to a thoroughbred Berkshire.

The human race is degenerating in root and branch, and it behooves us to seriously consider the question before it is too late. While fewer babies die, there are also fewer adults who reach a hundred years.

I stated at the outset that ignorance and a false idea of personal liberty were the cause of a high death rate. "A little learning is a dangerous thing; drink deep or taste not the Pierian spring." As we have tasted, it behooves us to drink deep. The immortal words of Patrick Henry as to liberty have two separate and distinct meanings, depending upon whether uttered by a wise man or a fool.

What are we going to do to lessen the unnecessary deaths from chronic diseases and thereby improve the stamina of the race? I am sure I cannot say, but I have some opinions upon the subject.

First, we will reduce our communicable diseases to the minimum. To do this we must have prompt and accurate morbidity reports. That these reports be accurate and prompt, it is necessary that we have a State law demanding it. A local or special county law does not command the respect that a State law does; and the same is true in comparing a State and National law. With accurate morbidity statistics, the physicians reporting to the city or county boards of health, and their local boards making a monthly report to the State Board, will give the disease a location and a more definite trend to the work. These reports should be published monthly, that the people may know where there is danger and where none. This will greatly facilitate the work and will give more opportunity to work on those conditions that are advancing so rapidly upon us.

There should be a closer coöperation between boards of health and boards of education, and with associations of all kinds that have for their object the improvement of the race—women's clubs, mothers' clubs, farmers' unions, etc.

Education is the crying need of our people. We have the information necessary to produce a race of centenarians, and all that is needed is the scientific application, and this can only be applied after thorough enlightenment of the people. We must start at the very beginning, both as to method of education and those to be educated. This will, of necessity, be a slow process, and no one need hope to see more than a small ripple made upon the human sea for years to come; but if we can, in a measure, stop the tide, we will have accomplished wonders. As it is the constant dropping of water that wears away the stone, so the constant hammering all together, all the time, is bound to bring results.

Now, during this meeting I hope you will bear with me in my inexperience as a presiding officer; that you will give close and careful attention to all subjects, and that discussions be full and free. There is not a man here but who has some information that would be of benefit to the others, and only by discussion can we get a well rounded view of the subject for consideration.

REPORT OF THE SECRETARY-TREASURER.

Mr. President and Members of the Association:

As secretary, I wish to report that with the assistance of the president, Dr. Jones, the program which you have before you has been prepared, and we trust it will prove interesting and profitable. As treasurer, I desire to report that the total disbursements during the year have been only $4. My report last year showed a balance of $26 on hand June 1st. The $4 expended for printing the programs for last year's meeting leaves $22 in the treasury, an ample amount for the needs of the association if its expenses are not greatly increased over former years.

W. S. Rankin, M.D.,
Secretary-Treasurer.

TEACHING SANITATION AND HYGIENE IN THE SCHOOLS BY PRECEPT.

THOMAS R. FOUST, SUPERINTENDENT PUBLIC SCHOOLS OF GUILFORD COUNTY.

There are two classes of people that always embarrass me very much when I appear before them. One class consists of the preachers, and the other of doctors. I feel myself so incapable of offering any suggestions to either class of these men that I am very much embarrassed by them. I do not believe that any man could have gotten me to talk to you this morning except my good friend, Dr. Jones. It has been my privilege and pleasure to work in close coöperation and sympathy with him as health officer, and to promote, as far as I could, the health work of Guilford County.

This is an age of conservation rather than of cure. We have come to realize that the best plan to proceed with anything is to try to save it, rather than to try to remedy some defect after it has developed. We have come to realize that the doctor who tries to keep us well is much better than the doctor who comes along and finds us sick and patches us up. We know that every case of sickness leaves a man worse off than if he had not had the disease.

To give you some idea, and I will not be giving you anything new, but it will serve to emphasize the importance of this problem before us: I saw it stated recently that the number of deaths in this country was 1,500,000, and of that number 600,000 could have been prevented or postponed. The cost to this country of these 600,000 deaths is $2,000,000,000. Now, when we see that the entire wealth of this country is only $110,000,000,000, and see that we are losing each year, from deaths that could be prevented or postponed, $2,000,000,000, or one-fiftieth of the entire wealth of the country, we see what an appalling task we have before us.

The subject on which I am to talk is "The Teaching of Sanitation in the Schools by Precept." I remember that the first man I heard talk in Greensboro on this subject was Dr. Ferrell, who is now with the International Health Commission. I was invited to that meeting because I was the superintendent of schools, and Dr. Ferrell did what everybody tries to do—put the burden on the public school teacher. When we try to organize a health movement, the first thing the doctor says is that the public school teacher holds the key to the situation. I sometimes think

that we poor school teachers will be so burdened with these things, in which we must help, that we will forget our main business—teaching in the public schools.

Well, you are right when you say that the public school teacher holds the key to the situation. I do not mean by that that the public school teachers of this county, or any county in North Carolina, can handle this problem at all without the hearty coöperation of the medical profession. You must tell us what to do, you must teach us, and then put the burden upon us to help you carry into effect the things which you have worked out through the study of medical science. That is the problem; and I believe it is true in every county I know anything about that the public school teachers and the superintendents of schools are helping public health work more than any other class of people.

You medical men have displayed a remarkable spirit of unselfishness in leading in this movement. You have advocated this, when you are obliged to see that it may possibly, by keeping folks well, cut you out of a little fee you might otherwise get. You have been the leaders in the work, and I want to commend the spirit you have displayed.

We know that the best way to teach the child is by example. If you can show him something that will appeal to his sense of sight or some other of the five senses, that is the most effective way to teach. If we could teach public health problems to the children by example entirely, it would be the most effective way in which to reach them. But when we look at the problem, we see that only part of it can be done by example, and a great deal must be taught by precept, by telling the children.

Now, if you were to go out to a crowd of grown folks and just tell them some things about which they had little knowledge and no experience, or to which perhaps all the experience of their lives was opposed, it would not do much good. But if you tell those things to little children, and teach them daily, then your preaching and teaching will amount to something. We have a good example of that in the farm demonstration work. They go out over the country and teach the people and try to get them to change their methods of farming. Some change and some do not. But we have found that to change the farming methods of the State you must get folks whose ideas have not been formed, and teach them the correct methods.

How loath these grown folks are to change! I was standing by a peach tree in full bloom, and on it there were some mummies from the previous year. I told the man he had better take off those things and bury them, because they were loaded with the spores of the brown rot.

He replied: "My experience is that when we are going to have peaches, we will have them." You might preach to that man about the dangers of impure drinking-water, etc., and his answer would probably be: "If I am going to have typhoid, I will have it, and there is no use in trying to prevent it." But if you will take the young boy and teach him that leaving the mummies on the peach tree will destroy the future crop, you can do something with him. Of course, if you can then show him a tree properly cared for, and one improperly cared for, it will be more impressive. But you cannot teach everything by example, as, for instance, the dangers of putting pencils in the mouth, the dangers of the common drinking cup, etc.

Now, it seems to me that the problem we have before us is to get our public school teachers thoroughly interested, for if you get them thoroughly interested they will find a way to teach the children. The books have already done a great deal of good; and in those counties where there are whole-time health officers who will interest the children in this subject, we are going to do a great work in the saving of that $2,000,000,000 annually to our people. It seems to me that this problem could be solved by close coöperation between the public school teachers and the public health officer, who will visit the schools and talk to the children; and in talking to them he does more than that, for he talks to the teacher and shows her what kind of work to do with these children. I believe the greatest opportunity you gentlemen have in this work is through the public schools. You can do something among the grown people, but not much, and if we solve this problem at all we must do it by appealing to teachable children.

Of course, home would be the best place to do this, instead of the school, where the teacher has charge of the children for only a small part of their time. But here is the difficulty: How many people are able to give their children such instruction? Unfortunately, very few, and we cannot have this work done in the home until we have a generation of grown people who have learned these things in the schools.

One of the best illustrations of this fact that I know of is the prohibition movement. That did not make much headway until it had been taught in the schools long enough to have voters who had been taught there that alcohol is detrimental to man.

Tell the school teachers what to do, and I can guarantee that, so far as they can, they will carry out your instructions.

TEACHING SANITATION AND HYGIENE IN THE SCHOOLS BY EXAMPLE.

DR. CHARLES T. NESBITT, HEALTH OFFICER OF WILMINGTON AND NEW HANOVER COUNTY.

The subject of the instruction of children by example in the schools is one in which I have had a very considerable interest. I do not know that I could do better than merely relate what we have been trying to do in our own county, and the obstacles that we have found there, and the things which were necessary to overcome.

The avenue to teaching public health work and sanitation by example is directly through the board of education and the superintendent of free schools. Nothing can be done until you can get the ear and the sympathy of this board. A survey of the public schools of any part of our State would show that very little attention has been paid in the past to the importance of example teaching in the public schools. When we first examined the public schools of New Hanover County we found every possible deficiency, I think. There was insufficient light, insufficient desk room, insufficient floor space, insufficient breathing space. Sometimes there were swamps in the immediate vicinity. Sometimes we found the wells polluted. The habit was to build a house with a woodshed on one side and a closet on the other. These closets were never cleaned, the excreta being left there from year to year. The schoolhouses themselves were not clean.

When we went into the county work, as the law requires, we made an inspection of the schools of the county. We refused to certify any school in the county as sanitary, and this coming year is the first that we can certify any schools outside of the city of Wilmington as sanitary. A number of them are brand-new buildings. Some of them have not been built in accordance with public school architectural practice. In one school for the negroes we recommended the right interior painting. When we went to inspect the school, we found that the ceiling had been painted a very dark slate color. There were cross lights—light from both sides. The seating was without reference to the light or to the size of the children. The board of education is rather an aristocratic body, and it is very difficult to approach them.

I do not know whether New Hanover County has the same laws as the others. It has some special school laws, I think. Any attempt to change them meets with intense resistance. The superintendent of pub-

lic education is a member of the county board of health, and it is exceedingly difficult for him to adjust his relationships.

After having published in detail the criticisms of the schools of the county, a bond issue for $175,000 was voted, and things began to improve. Some of the schools have been provided with deep-water supplies that are free from pollution; others still are provided with shallow pumps. All of the schools, for both white and black, have concrete L. R. S. closets, with effluent distributing systems.

The child is taught to look upon the school as the place where he must naturally turn for guidance. If he finds a dirty, badly lighted, ill-kept room, a place where he is uncomfortable, it will be pretty difficult to get into his consciousness anything that will be for his well-being. Afterward, when he grows up, he will wonder how any one had the nerve to talk to him about sanitation, and teach him in such a place. The most important way in which sanitation can be taught will be in a well built, well lighted, well kept schoolhouse; a well heated schoolhouse, provided with adjustable desks, one where the desks will be placed rightly in relation to the lights, one with no blackboards between entering lights. Sometimes we found that the blackboards were placed in accordance with the teacher's comfort. Now, the eyes of all these little children are more valuable than the eyes of one teacher.

If the child finds that small things of that kind are taken into consideration by the board of education, he will have respect for their judgment and will look up to them. If the teacher is impressed with the fact that she can use the ordinary furniture of the room, its location, the color of the wall, the seats, the floor, everything in the room, as examples from which to teach sanitation without reference to any textbook; if she can tell them how the things are situated, and why; if she can go further and find clean grounds, a perfectly sanitary privy and water supply, she will have all the text she needs to carry her pupils through a long course of instruction.

So far as personal cleanliness is concerned, I have been in some schools where the teacher was not making any great effort to make an impression of personal cleanliness. I know that it is not easy to keep immaculately clean in a dusty room, but the teacher herself can keep clean. When she comes in contact with anything likely to soil her hands, if she will immediately wash her hands, it will be an example to the children. If the children are not permitted to become soiled and stay soiled, it will have a very beneficial effect.

You all know that one of the greatest dangers in our schools is the droplet infection that comes from the nose and throat. I have seen a

school teacher sneeze in the faces of the entire school. I saw a superintendent do it once. Such a thing may spread contagious diseases. If a teacher is always careful to use a handkerchief, and urges the children to keep handkerchiefs and to use them, she can cut down measles and whooping-cough tremendously. There is not the slightest doubt of that.

I think that the power of the school to teach by example is simply enormous. There is no precept which carries weight unless impressed by example. You must have the concrete thing to show in order to make an impression on a young mind. There are so many, many efforts that have been made to teach by precept alone, without furnishing the concrete examples. We have them all about us. We all know how they have failed. You must have something to show the eye and let the hand feel. A little ingenuity, and a little exercise of this ingenuity, will furnish in the schoolroom, from the ordinary objects of daily use and contact, an enormous number of examples for sanitary instruction.

Dr. William M. Jones: This is one of the most important subjects that will come before this meeting, if not the most important. These two talks are now open for discussion, and I hope that it will be full and free.

Dr. G. M. Cooper, Raleigh: I would like to say, in the first place, that I was especially impressed with Professor Foust's discussion of the school problem. I think he has sounded the keynote. Dr. Foust said that we threw the burden on the school teacher. It is customary, I know, to throw the burden on them to as great an extent as we possibly can. I was struck with his remarks about the prohibition question—that the surface was not even scratched until the schools took it up in physiology and hygiene.

I want to say, as a county health officer, that the best work done was done by the aid of the teachers. When I got a teacher thoroughly interested, I had no further trouble. In a community where there were contagious diseases, if the people did nothing to help us, I found that we did absolutely nothing. I made the remark the other day to the teachers that if the State Normal School and the Carolina Training School turned out teachers with an interest in the subjects of sanitation and hygiene, they could do no greater work. The Carolina Training School particularly is giving its students something beyond the ordinary, everyday interest we find in teachers, and I want to take this opportunity of commending that institution for its work in this direction.

Dr. B. K. Hays, Oxford: I am new in this work, and I am here to learn. I was intensely interested in the talks that were made, but I want

to ask, if it will be in order for me to do so, that the gentlemen in their talks tell us their results and how they were obtained. We know that the conditions are bad, we know they are rotten, from Murphy to Manteo. I hope that we shall not have to spend the day in hearing how bad they are. Tell us how you get results, how you reduced the number of flies, etc.

I regard the weekly talk that I make in the school in my town as the greatest work I do. Since we have no examination on this health work, and since the pupils have to be examined on their other subjects and naturally we do not want to take much time from them, I made a bargain to review them on history one week if they would listen to me talk on sanitation the next week. So one week I told them about "night air," about mosquitoes, etc. The next week, in accordance with my promise to review them on history, I told them about De Soto, and how he died from being exposed to night air, and the children laughed. That laugh was the best result that I have obtained during my brief term of office.

Dr. D. E. Sevier, Asheville: The first work we have to do is to secure the coöperation of the board of education and of the teachers of the county. I believe it is the first duty of the health officer to go before the teachers at the first meeting held in his county and deliver to those teachers a hygiene and sanitation talk, explain to them that you are coming to them as their assistant; that while you are asking for their help, you will relieve them from a great many burdens. At the same time, carry with you a little pamphlet or booklet outlining the duties of a teacher in regard to the infectious or contagious diseases which may be found in the schoolroom during her term. Teach her along these lines, and you have laid a foundation for your health work that cannot be equaled in any other way.

I went before the teachers of Buncombe County at their first meeting and talked to them along these lines. I extended an invitation to them to make my office their headquarters when in Asheville. In so doing, I won their confidence, and they have carried out my instructions almost to the letter. When I go to a school, the teacher meets me with the glad hand. The pupils, of course, watch her every move. When you have instructed the teacher as to the lighting, the ventilating, etc., and then talk to the pupils, they will carry out your directions, not only in the schoolroom, but in the homes as well.

I would like to say that we have some very good school buildings in Buncombe County. One at Black Mountain, in particular, has running water, two drinking fountains in the front yard, and two separate toilets in the building. This building is elegantly lighted, well ventilated, and

kept in a perfectly sanitary condition. This is due mostly to the efforts of the Ladies' Betterment Society, assisted by one of the teachers, Miss Anderson. They collected $300 to put in these fixtures, and afterwards the general public made up the amount to pay what they had borrowed.

You can also instruct the teacher what to do when a child is sick, and what kind of note to send to the parents. The parents will not fall out with the teacher for sending a child home, because if it is done with one, they will know that you are looking out for the welfare of all.

I believe that the teachers, if treated in a courteous manner by the health officers of the various counties, will do more in public health work than it would be possible for all the physicians in that county, even if the physicians lend their assistance.

Dr. J. E. Malone, Louisburg: I am not a whole-time health officer. I am one in spirit and in pride in the work, but not financially.

I have made it a point, since I have been superintendent of health, which has been for a good many years, to go around and make health addresses in six of the larger schools. Every week I have something to say about health in the county paper. I make it a point to see five people each day and talk to them five minutes on health. I give them instruction and give them literature.

Another thing I am working harder on now than anything else is the installation of sanitary privies. We are trying to get the very simplest kinds. I was out inspecting on the watershed several weeks ago, and a negro woman for whom I used to practice asked me to come to dinner. Well, I went. Near by there was a privy. I asked her husband for a handful of flour, and scattered it over the flies under the privy. Soon after we sat at table—food covered with white flour-backed flies. '"Fo' Gard!" said the husband. "Doctor, whar dem flies comes frum?" "You know," said I. "Wall, doctor, fur de Lord's sake, tell me how to git shed uf 'um." I put him on to the simple 5-foot deep by 2 feet square hole in the ground sanitary privy, and almost the entire population in that community followed John Smith's example. Another good object lesson.

I have two negro health societies in my county, and am going to have more. We have some white ones, too. I have two societies on the watershed, one on each side of the river. We meet once a month for discussion of health questions, and it is the most interesting thing you ever heard. Once I offered a prize of an Ingersoll watch to the one who made the best talk on health. I have taken an automobile some nights, with a crowd from Louisburg, and have gone out to hear these discussions. You would be surprised to see the interest and enthusiasm manifested by the negroes. Negroes travel a good deal night and day, visiting, hunt-

ing, and fishing. They have opportunity to inspect the watershed for dead animals and have them removed, burned, and report to me every Saturday. Thereby the watershed is respected.

On the inspection of the watershed I visit sixty-four houses, and it is a big job. I am doing a whole-time county health officer's work on half pay. At first we got a man to inspect the watershed at $4.50 per day, but he broke down on it. I did not want the Morehead City incident repeated, so I told the authorities that I would inspect it myself, so I do it now, and send in the report every quarter. The negro assistants are a great help.

I think that thing of talking to five people every day about health, for five minutes, is a small thing, but it is carrying the thing around the county, and they are going to do something for a whole-time county health officer one of these days.

Dr. E. F. Strickland, Winston-Salem: I enjoyed the papers by Mr. Foust and Dr. Nesbitt exceedingly, and I simply speak, as most of those who have preceded me in the discussion have done, more particularly concerning my individual experience in my county.

In regard to teaching school children by example: We meet the teachers in the annual and quarterly meetings and in their educational conventions. My experience in the last few years in its varied forms, in meeting with the teachers and in the visitation of schools, has shown me that we get the coöperation, the very hearty coöperation, of a majority of the teachers. In some instances we fail to get the coöperation that we seek and that we would be so glad to have.

I believe it was Dr. Nesbitt who said something about the superintendent of public instruction being, as it were, between the devil and the deep blue sea. I believe it is sometimes the case, and I can say it from experience.

In our county the coöperating teachers meet me with a glad hand on my visitations to the schools. They coöperate, they are glad to have instructions, and they are glad to put into execution the instructions given them. They make health work a living, vital force in the school term. In a minority this is not the case. For example, during the past winter season I visited a school. I think it had an enrollment of about seventy-six, with two teachers. At the conclusion of my talk I asked for voluntary vaccination against smallpox. The two lady teachers were first to volunteer, and I vaccinated every child in that house that was not already immune—every child. In another section of the county I visited a school. Let me say here that we find many and varied conditions in the same county, almost in the same eastern or western or north-

ern or southern section of the same county. In almost adjoining townships you find such a difference in sentiment. Well, I visited this school. There had been a case of smallpox two miles from it, and so there was some cause for uneasiness. There had been no cases near the other school. I gave a talk on sanitation and health, and at the conclusion asked those in the school to be vaccinated. It was a one-teacher school, and I think there were about forty or fifty pupils present. I told them of the dangers of smallpox, and of the absolute safety in vaccination, then asked how many had been vaccinated. Not a hand went up—not a hand. I told them there was smallpox not far away and that there was danger. Then I asked how many would submit to vaccination. Not a hand went up. I saw that the children's eyes were fixed on the teacher, and that caused me to turn to him. I asked if he had been vaccinated. He said he had not. I asked him if he would allow me to vaccinate him, and he said, "No, not today." "Well," I said, "there is not much hope of the children's being vaccinated. I have done you all the good I can, except to say that I hope that you will clean up this schoolhouse and get it looking a little better. There are a good many papers around, and that is dangerous." Then I bade him goodbye and left.

I have thought of the conditions there a good many times since then. I spoke of the matter personally to the superintendent of education, and I have spoken of it to the board of education. I asked them what they thought of that teacher, and they said he was a good teacher. Somebody said recently that he is all right in politics, and is a pretty good fellow. I said that I did not think he is fit to teach school—public school.

Now, will the boards of education continue to recognize the certificates of persons to teach in the public schools who are so derelict of their duty and so utterly unmindful of the common laws of health and of the sanitary conditions that should be the environment of every school? It is a question; it is a problem. A man is not licensed to practice medicine in North Carolina unless he can give other evidences of substantial character and qualification than that of answering a few questions put to him on the day of examination. I believe this should be so with other public servants. I believe the county boards of education and health should get together more closely and work together more harmoniously for the safeguarding of the public health and of the health of the children. It is time thrown away for us and for the pupil and all concerned when there is not a satisfactory understanding in the matter of the employment of coöperative teachers in the public schools.

Professor Foust: I have only a word to say. Dr. Hays asked for examples, and I can give one. When the health work was started in

Guilford, I think there was not a single school in the county that had individual drinking cups or sanitary fountains. Now at least 80 per cent of them have either drinking cups or sanitary fountains. The children bring cups from home and keep them at the school.

Dr. Strickland spoke of a teacher that would not be vaccinated, and wanted to know what we ought to do. Smallpox broke out in this county. A teacher laid down the law to the children in her school; told them that if they would not be vaccinated she would quit the school. Dr. Jones went over there and vaccinated the children. Then he turned to the teacher and asked her to submit to vaccination, but she said no, and she would not. So we left. On Monday morning I got a telephone message that she had left the school. The people got after her for making the children submit to vaccination and not being vaccinated herself. Now, I have thought over that incident, and if that teacher is employed by a committee this year, I shall veto the appointment.

Dr. Nesbitt spoke of the county superintendent's being between the devil and the deep blue sea, because of his interlocking relations. I hope I am not in that position, and I am a county superintendent. If a single suggestion has come from the health officer which has not been approved, I do not know it. The board of education has not only sanctioned his requests, but has done all it could to further his work. This problem depends too much on the joint sympathy and action of the two boards, and I hope the conditions in New Hanover will be remedied. I can see this, that the board of health might ask for a great big appropriation that could not be given, and the board of education might be obliged to scale it down. But if the board of health knows the financial condition of the board of education, and knows that that board is working in sympathy with it, they ought to get along all right; and if they do not, something should be done to get them together.

Dr. Nesbitt: I did not mean to convey the impression that the board of education and the board of health in New Hanover County had been indulging in controversies of any sort. The results prove that the boards have been working in harmony.

In speaking, if I remember correctly, of the superintendent of schools being between the devil and the deep blue sea, I was speaking very broadly of the conditions throughout the State as created by the statutes, and of the possibility of a man's being in that predicament. In our county we have gotten on very well. It has been possible to make a great many improvements. There is, of course, a viewpoint quite at variance between the board of education and the board of health. The board of health is insisting on changes necessary for the health of the children

and the efficiency of the schools; the board of education is charged with getting the most out of its appropriation, but while, of course, there is this great variation in the viewpoint, there never has been any friction between the two boards in New Hanover County.

New Hanover County is very fortunate, I think, in having a compulsory vaccination regulation. All school teachers and pupils, and all janitors and others who work in or about schools, are obliged to be vaccinated. The school children are examined, and we accept no certificates of vaccination except the scar of a successful vaccination. In that way we have kept the county practically free from smallpox, except for occasional cases from other counties. In winter we have an influx of negroes from other counties to work about the wharves and cotton presses, and now and then we have a case of smallpox. We use each case as a reason for vaccinating everybody in the neighborhood, and usually each case is the means for vaccinating two or three hundred people. In that way we get around over the county pretty well. The case, of course, is isolated. We use both measures very rigidly.

Dr. Hays wanted to know about the methods we use in the schools. In our county we do a great deal of personal instruction in the schools. Dr. Thames does most of that work. In addition, we have organizations of mothers, and we make stated visits to the schoolhouses and try to make the school a sort of community center from which beneficial influences radiate. We get the mothers interested in discussion among themselves on how to care for their children. The teachers are very carefully instructed, and in giving that instruction we lay some stress upon the possibility of the teacher's being infected from the children. We find that a good thing to do. We impress upon them that with plenty of air and sunlight and the use of the handkerchief there is little danger. We teach them to look for the signs of approaching illness, flushed face, bright eye, etc. We tell them, when they notice these signs in a child, to send that child home at once and to report to us, so that we can look it up and see what is the matter with it. This year we are putting in nursing service in the schools of Wilmington, and Dr. Thames and I will probably supply a good part of the medical work, in addition to the other work, and also try to keep up the work in the country schools.

THE RURAL SEWAGE PROBLEM.

JOHN A. FERRELL, M.D., NEW YORK CITY.

The rural sewage problem is probably the most important single activity in which health officers are engaged. It affords work that can be done throughout every month of the year and that is needed in practically every country of the globe.

The cities and towns have been forced much earlier than the rural districts to provide adequate and reasonably safe methods of sewage disposal. The smaller towns and villages, while not generally able to install sewerage systems, have endeavored to adopt what seemed the next best and most practicable method with the funds and facilities at their command. The rural districts, constituting the bulk of this and most other countries, have been last to attempt to provide for safe sewage disposal. Here it becomes a family and not a community matter, so far as the actual work involved is concerned.

Failure to properly dispose of sewage in a sanitary way is very largely responsible for typhoid fever, hookworm disease, tuberculosis, diarrheas, dysenteries, and other enteric diseases. These are filth diseases, and they afford an excellent index as to the filthiness or cleanliness of a community.

In discussing methods for checking soil pollution, especially in rural districts, too much time has been wasted in recent years in an effort to determine by theory rather than by practice what is the best type of privy for the rural districts. Fortunately, during the last year or two real headway has been made in getting installed some of all the types that have been recommended. I am not prepared to say what type of closet is best, and no one else is, so far as I know. It is still an open question, but it is in a fair way now to be settled soon. Actual experience with the various types will soon eliminate from general use those which are not practicable.

There are health officers here representing the State Board of Health and the county boards of health who have had actual experience with the people in campaigns directed to privy building. They are the ones who should speak on this subject. If they have reached any conclusion they should instruct us. I think we might well afford to hear Dr. Cooper, Dr. Jones, Dr. Kibler, and Dr. Steele, who have had such experience.

As a representative of the International Health Commission, the selection of a type of privy is not a subject for me to discuss. The Commission as an agency is not doing work in its own name. The State boards of health and their auxiliaries are the responsible and accredited working agencies. Where the commission coöperates with a State it does not seek to settle such matters, but merely to strengthen the local boards of health so that they can carry the work through the experimental stages to a point where it will receive adequate support locally. For this reason I have decided not to present the paper I have prepared. If the local health officers, in solving the rural sewage problem, or other public health problems, should find that outside assistance could be helpful, an invitation will be welcomed.

Dr. William M. Jones: We would like to hear from some one on this point. If this question has not bothered you, it has certainly bothered me a great deal. I say right now that I do not know what is best, and do not know what is most satisfactory, and that is one reason why I should like to hear this subject discussed.

Dr. W. H. Kibler, Health Officer, Nash County: In our county we did not want to cover too much territory, but we are trying to work along several lines. We feel that rather than pick out one line and try to work that, it is better to develop several things together.

I think the most important thing is the question of soil pollution. I believe that firmly, as firmly as I believe in anything in public health work. I believe that it will do more to prevent typhoid fever and hookworm disease and these other diseases than anything else we can do. Not all the people will be vaccinated against typhoid fever; but even if they are, you still have these other diseases. While I was working for the hookworm campaign I went before a board of commissioners. One prominent lawyer said, "I am glad that you are going to do something about typhoid fever. That is important; but as to hookworm disease, we don't believe in that; it is not popular here." Now, I happened to know that they had a high percentage of infection there, and I told him that I thought it was popular.

Now, the towns want information on how to handle the question of the disposal of human excrement, and it is up to somebody. They expect the health officer to give them some light on the question of handling sewage. They want to do what is best, and yet do not want to spend too much money. They want a cheap thing and an efficient thing.

It is the same way in the country. Go to a farm and talk to a man about a privy. Ask him to put in one that costs $25, and see what he

says to you. You will not get in one that is complicated or that costs much. What you will get in will be one easily built and one that is at the same time effective in preventing the spread of disease by flies.

As I said, we are working along several different lines. Nash County has recently passed an ordinance that every schoolhouse shall have at least two sanitary privies that shall pass muster so far as the health officer is concerned. They must come up to a certain standard. I am glad to know that this has also been done in New Hanover County, and that they have been successful in getting an appropriation. But where you cannot get an appropriation you will have to go about it in a way that will not cost much money.

Some one said a while ago that health work is mostly educational at the present time. In Nash County we are trying to do some educational work, too. We are trying to advance the education of the people along health lines to such a point that we can get them to do the things we want them to do. That was one of the main objects in getting sanitary privies in at the schools first, because, as one of the gentlemen said, the school teacher is a very important factor in getting many things done in the community. We found that to be true with the vaccination ordinance. Nash County has a vaccination ordinance that has worked so successfully that they have succeeded in eliminating smallpox from the county. The superintendent of education has told me that the year before the ordinance was passed at least six schools were broken up because of smallpox. Last year not a single school was closed on account of it. The people appreciate that kind of an argument more than anything else you can tell them.

We cannot go to every family in the county. I believe personal contact is the most important way, but we cannot go to every one's house and talk about adopting a sanitary privy. So we have a plan: We have bought a moving picture machine and have bought some health films and are going to show pictures around in different parts of the county. The commissioners made the appropriation for this purpose.

The school privy is also very important. If the pupils get impressions at the school, they carry them home with them. You cannot do anything with the children if the school is dirty, and I think the school privy will be a very important factor in getting in privies in the school districts.

A little more of the ground we are attempting to cover is in doing some intensive health work in the county. We want to follow the plan formerly used by the State Board of Health and the International Health Commission. The plan was to get 90 per cent of the heads of

families to sign a petition to have intensive health work done in that community. The most important thing is to put in a sanitary privy. We examine all who want to be examined for hookworm, and vaccinate them for typhoid fever and for smallpox. We do these things for the people, and ask them to promise us to put in a sanitary privy. We have a petition circulating in one community, and are thinking of doing it in another. It takes a great deal of time, because we promise to make a personal inspection of the premises of each family in the community; but we are going to try to work at least one of these communities while we are doing the vaccination for typhoid fever, and it is going to take a great deal of time.

Dr. G. M. Cooper, Chief of Bureau of Rural Sanitation, State Board of Health: I think Dr. Jones covered this question in one sentence, when he said that he does not know what is the best plan, and when he said, in the same sentence, that it is an important question. My experience has been that it is one of the most important propositions confronting health workers in the South. As you know, the International Health Commission has given its unqualified approval to the pit system. On the other hand, the United States Public Health Service has put the stamp of absolute disapproval on the same system. To my mind, they are two strong agencies. My own opinion is that somewhere between these two mountains lies the valley of truth. I think that the commission is right in some particulars, and I believe the Public Health Service is right in some particulars. I believe that in some types of soil a pit privy is all right. The International Health Commission did some intensive work in my county, putting in some five hundred privies. After eight months, I made some tests and found them satisfactory. They also put in some can systems, and those I found satisfactory where the cleaning had been done right.

This is a proposition that has to be worked out by further experience. As to absolutely condemning the pit type, I think that is unwise. In some soils it is all right. The main thing is to get a type that will be practical and safe and within the reach of everybody. That is about as far as anybody can go.

The only question or objection to the pit privy would be that it is likely to contaminate the drinking-water supply. Dr. Lumsden has told me personally that in five or six or seven years there would be no doubt of contamination anywhere. But we will wait for the five or six or seven years.

While I am on the floor, I wish to say that there are three agencies helping health work in North Carolina more than ever before. One

agency is the boards of county commissioners, who are putting their stamp of approval on health work. The next agency is the county superintendent of schools, and the third is the mayors of progressive towns. One of these last is Mayor Murphy of Greensboro. Every man has read of the efforts he has made for the advancement of public health. I wish to express my thanks to these men, who are making health work easier than ever before.

Dr. Charles T. Nesbitt, Health Officer, City of Wilmington and New Hanover County: The question of the type of privy has interested me for about four and a half years. I think I have made every mistake a health officer can possibly make with reference to that particular subject. I have had every experience, almost, that a health officer can possibly have in connection with installing sanitary privies.

I have had the city problem, the suburban problem, the village problem, and the rural problem. I think the mistake that is generally made is in following the example of the Russian ruler, who decided that the Russians should be members of the Greek Church. He sent to Constantinople for the priests, vestments, etc., and had the images of Thor thrown into the rivers. The people followed them, and he had them herded in the rivers and baptized. The result was that the Greek Church was not immediately popular. That, I think, is what happens when a man insists on giving sanitary privies to people who do not want them. There is only one way in which to get people to build sanitary privies, and that is to convince them of the necessity for them. You cannot convince a man by telling him once. You must prove to him that he needs it. The mistakes made in that direction have been in telling the man emphatically that he must do it at once or he will die, etc. After a while he gets irritated, and if he puts it in he will not use it. It will be with him as it was with an old negro woman in my county. We kept at her until she put in a sanitary privy. It was a splendid structure, built exactly according to specifications, and I congratulated her upon it. "Yes," she said, "I put it in to please you." The next month I examined it, and found it clean in every particular. I asked her why she did not use it. "Law, honey," she said, "I'm not going to mess it up."

You cannot teach health principles in a year. It takes two or three or four years. Because we believe them is no reason why other people must believe them. They are interested in other things.

As to the best type of privy: it is one from which no material can escape to pollute the ground, and to which no fly has access, and from which the gases can escape without creating disagreeable odors. These three things are essential. Nothing more is necessary; nothing less will

do. We know that we can get them, because we have in New Hanover County sanitary fly-tight privies. Every house in three townships in New Hanover County has a more or less successful attempt to secure waterproofness and fly-tightness in the privy. They are getting better and better, because the people have not been crowded, and they are willing to make improvements. I think any lessening of the ideal is unwise. We know what is absolutely necessary, and I think it is unwise to teach that anything less than a fly-tight, waterproof privy has any great sanitary value. I think it would be just as unwise as for a minister of the gospel to go into an unenlightened community and say, "These people are not quite ready for the gospel; I will teach them Mohammedanism."

As to the cost of our sanitary privies, it has cost our department not one red cent for construction. Every one has been built by the man or woman who owned the property. The privies that are built are houses, are provided with covered seats, are ventilated, as a usual thing, and are provided with receptacles. The openings are all screened and the cracks stripped.

The cost to the Health Department for one township, to get privies built in that township, was the wages of one man at $65 for two months and a half. Of course, as you know, we have been using the newspapers and distributing a great deal of literature, and have had a lot of work of that kind going on for the last three or four years. The man's wages in the one township was $168, and I think the number of privies built was something like three or four hundred.

Dr. W. S. Rankin, Secretary State Board of Health: In any piece of health work you have to find the cost of the unit of that piece of work and compare its cost with the cost of other units. In this privy proposition I think the privy is the unit.

Take the 1,796 privies built in this State as a result of the International Health Commission's efforts. The area covered is 369 square miles, a little more than half the area of an average county, with a population of 11,500, just half of an average county's population. This total of 1,796 includes all the privies that have been improved, and that improvement consists in everything from a hole in the ground with a box over it to the best type we know. The cost for each privy improved was $10.90. We have to figure the cost of the unit.

Dr. Ferrell: The policy I tried to make clear in the beginning is that whatever is done with the assistance of the International Health Commission or of the Rockefeller Sanitary Commission is done as a work of the State Board of Health, by which the money is spent. No

other policy has ever been intended. The sole object of the International Health Commission is to aid the State and the subordinate departments within the State to develop with their own resources.

I grant that probably 90 per cent of the closets constructed in the Southern States, where this work has been going on, are of the pit type. They have been built, so far as I am informed, with the approval and in accordance with literature issued by the State boards of health. For instance, the North Carolina State Board of Health issues a pamphlet on the pit closet. Whatever has been done has been under the authority of the State boards of health and in absolute accord with their wishes.

Dr. Cooper suggested that the International Health Commission is standing firmly for the pit type of closet, and nothing else. I do not think I can make its position any clearer. I may say, however, that the commission is coöperating with a State board of health which opposes the pit closet and advocates a modified septic-tank closet, and we have raised no objections. The State has been working on that type of closet since last January. The privies that are being constructed in that State are somewhat expensive.

With more than 4,600 privies installed in the Southern States, an opportunity is afforded for a scientific study of every type of closet now installed. Such a study is becoming entirely feasible. I may say that some thought is being given to the employment of men whose scientific attainments will not be questioned in this or any other State to undertake this work.

I merely make this statement in explanation. We shall have something definite soon, because people are getting ready for it. We are going to make mistakes, but we are going in the right direction. Experience and further observation are what is needed, and it is gratifying that opportunity for them is now at hand.

Dr. Cooper: I hope that Dr. Ferrell will let me make my meaning clear. I meant that the International Health Commission considered the pit type of privy safe.

COMMITTEES NAMED.

The following committees were appointed by the president:

Committee on Nominations—Dr. L. B. McBrayer, Dr. C. V. Reynolds, and Dr. Arch. Cheatham.

Committee on Resolutions—Dr. J. Howell Way, Dr. E. F. Strickland, and Dr. Charles T. Nesbitt.

Auditing Committee—Dr. B. K. Hays, Dr. G. M. Cooper, and Dr. D. E. Sevier.

MORBIDITY REPORTS—HOW TO SECURE.

G. M. Cooper, M.D.
(Chief, Bureau of Rural Sanitation, State Board of Health.)

If any man could answer this query satisfactorily, at once and for all, his fortune and fame would be secure for all time.

The problem of how to obtain accurate and dependable information from the public, when such information is of use to that same public, is a source of worry to every official concerned with the gathering of such information.

As long as the Federal Government has been in the business of gathering crop reports, with the vast agencies at its command, which would seem to warrant accuracy, hardly an estimate is made public but that there is some man to question its correctness.

In the Department of Vital Statistics of our State Government, with several thousand dollars, and all the law necessary for requiring absolutely accurate reports—the registrars being paid, even, to make the reports—thus far those in authority have been unable to have the State recognized in the United States registration area, on account of the fact that reports are not up to standard requirements. So it goes all along the line.

Now, if it is impossible at present to procure accurate mortality reports, of course it is more nearly impossible to secure dependable morbidity reports. But if we cannot get perfect reports, we must get the best we can.

Every health officer knows that but little can be accomplished in the control of preventable disease unless the officer knows where such disease is located, and unless he has this knowledge as soon as the disease appears.

At best, all methods yet devised are faulty. The physicians, even if all did their full duty, cannot be depended upon to report all the cases, for the simple reason that a large per cent of people living in the rural sections never send for a physician. In case of some of the more dangerous diseases, like diphtheria even, children often die before the fact is known to any physician, let alone the health officer.

Even in case of death, it does but little good to depend upon the undertaker, or the necessity of a burial permit and death certificate, because so many people are buried in the country in hand-made coffins, made by friends or neighbors. Of course, when the working of the vital statistics

law gets to be perfect, it will be a great help. But even then such reports will not help the child that is buried.

In my opinion, the only manner in which we shall ever be able to get reports which are systematic and really valuable will be to work through the organized school system.

In the first place, the whole question is a matter of education. We must educate the people to the need of health officers being in possession of this knowledge. Teach them that it is for the good of the public that this information be had promptly when occasion arises. In other words, like most other things worth while, the people themselves must be made to see the difference between doing nothing—as in the past, which means retrogression—and progress.

By far the best system yet devised which I have seen tried out is the Kansas idea of school health officers. The only drawback to this plan is that the schools are in session only from four to nine months of the year. But it is better to get accurate reports for part of the time than none at all.

The plan, which I found by experience as a county health officer to work mighty well, briefly stated, is this: The department of education requires every teacher in a county, white and black, to make an official report to the superintendent of schools at the end of each week. This report is prepared in blank form and the questions printed on a post-card. It is a very easy matter for the county physician or county health officer to have the county superintendent of schools allow him to insert two or three questions, as, for example: Are there any contagious diseases in your school district? If so, what? Have they been reported to the county health authorities?

The school people, I find, as a rule with but few exceptions, are glad to coöperate.

The next step is to have the boys and girls, each, at every school in a county elect a school health officer from among their own members, for a period of a month, say. It becomes, among other things, the duty of these pupils to get this information and give it to the teacher, who in turn makes a prompt report to the head of the county schools. The latter official will gladly allow the health official to look over these cards as soon as they come in to his office, and in most cases the superintendent himself will be on the lookout for them, and turn them over to the health officer.

In this manner I know I was able to get information promptly from remote sections which I could never have gotten otherwise.

I mention this only as one method. If any one present has any additional methods to suggest, I shall be glad to hear them stated.

The question is an important one, and until systematic, prompt reports are available for the health authorities the year around, the work of disease control and prevention must remain at best imperfect and far from satisfactory in the rural sections and small towns.

THE PROBLEM OF CONTAGIOUS DISEASES: WHAT TO DO WITH THE REPORTED DISEASE.

DR. M. T. EDGERTON, JR., HEALTH OFFICER, PITT COUNTY.

Mr. President, Gentlemen of the Association:

The State of North Carolina has no laws for the control of the contagious diseases, and only a very few of the counties have taken any very definite steps along this line. The absence of any definite State law, together with the lack of uniformity in the county rules now in force, has suggested the possibility that a discussion along this line might lead to some definite set of rules which could be adopted generally throughout the State.

In the handling of the contagious diseases in Pitt County we have used the rules and regulations suggested by the State Board of Health, and since, so far as I am aware, these rules have been adopted in only five counties, it might prove of interest to state the general nature of the rules and then discuss what our experience with them has been.

If North Carolina could formulate some definite State law for the handling of her contagious diseases she would be far ahead of her sister States, which have no laws whatsoever for some of the most fatal contagious diseases, and what laws there are in the different States are very much at variance with one another.

In a study of the State health laws in ten of the other States it is found that only one State has a quarantine law for whooping-cough, and in only five is there any cognizance taken of measles. All but one had some form of quarantine regulation for smallpox, while practically all had some definite regulation for diphtheria and scarlet fever. Typhoid was reportable in only two of the States studied.

The idea of the State Board of Health in formulating these proposed regulations was to facilitate and still effectually carry out suitable measures for the proper control of the infectious diseases.

The general plan is to handle the infectious diseases through the family physician. Under general rules, every physician in the county is required to report to the county health officer all cases of typhoid fever,

whooping-cough, measles, diphtheria, scarlet fever, and smallpox within twenty-four hours after diagnosis. If there is any suspicion that this has not been done, the health officer is required to visit the case himself, and the parent or householder is also held liable for concealing any contagious disease. The public is notified through the press of the existence of a contagious disease in the community. A general school census is taken of those children who have had vaccinnia, whooping-cough, measles, and smallpox, as well as the families where there are children under 2 years of age. This last information is obtained on account of the great fatality in the young infants in the case of whooping-cough.

TYPHOID FEVER.

The health officer instructs the householder as to proper precautions to prevent spread of the disease, while he himself tries to ascertain its origin. The householder is not allowed to sell any food which is usually consumed uncooked, and is compelled to disinfect all excreta from patient.

WHOOPING-COUGH, MEASLES, DIPHTHERIA, AND SCARLET FEVER

are all handled in the same general way. Under each disease there is a definite set of rules governing the health officer, and another set of rules governing the parent, while the teacher of the school affected is also given definite instructions as to what course to follow when the disease is present in the school.

The health officer sends a placard, a set of rules, and suitable literature on the disease in question to the parent, as well as additional literature to the school recently attended by the child, for distribution to the children who have recently been exposed. Publicity as to the existence of the disease is also given through the medium of the churches of the community.

The children affected or who have never been affected are quarantined in all four of the above mentioned diseases. In the case of measles and whooping-cough those children who have had the disease are permitted to continue their attendance on their school duties. In the case of diphtheria and scarlet fever all children in the household are excluded from school. In all cases the child affected is isolated from the other members of the household and is not allowed to leave the premises. All linen which leaves the household is first disinfected.

No teacher is permitted to continue her school duties while residing in a family where any of the above four diseases is present. The teachers are asked to distribute suitable literature to the school and to exclude all suspicious cases from school.

This gives you the general plan of procedure and some of the most salient features of the system under which we are operating. As regards the duration of the quarantine in the above diseases, it would seem that each case has to be treated on its individual merits.

In Rhode Island, where there is quarantine for whooping-cough, the time is set at twenty-five days as a minimum, or until the "whoop" has disappeared.

In the case of measles, two weeks is the period fixed in Illinois, while Rhode Island raises the quarantine one week after the appearance of the eruption.

In the case of diphtheria, the tendency is to cut down the length of quarantine. The best method, of course, is to obtain two negative throat cultures from the patient on successive days. Where this is impracticable, probably ten days after the disappearance of the membrane is safe in most cases.

Scarlet fever is usually quarantined three to five weeks in the different States. The twenty-eight days period of Rhode Island, with freedom from nasal and aural discharge, is probably a safe limit.

Can these infectious diseases be handled from the office of the county health officer? It is theoretically very simple to mail out suitable placards, regulations, and literature for the different diseases, and if this were effective the health officer would have more time to devote to more important matters. My personal experience has convinced me that a personal visit by the quarantining officer is necessary to get the coöperation of the parties quarantined.

When people are to be confined to their premises for weeks they want to know the whys and wherefores about all the details of the quarantine. It would be interesting to ascertain whether this is a provincialism of the people of Pitt or whether this is generally true.

SMALLPOX.

The handling of the smallpox situation in this State probably presents more interesting features than that of any other of the infectious diseases. Fortunately or unfortunately, we have had a rather rich experience in this contagion, both with and without quarantine, and can speak with some feeling on many phases of the situation.

As proposed by the State Board of Health in their rules and regulations, the only measures carried out in the management of smallpox are to placard the house, exclude all children from school who have not been vaccinated, notify the public through the press of the existence of the disease, and urge all to be vaccinated.

During my first month's stay in Pitt County we operated under the above rules. During this time we had about fifteen cases of smallpox in the town of Greenville. Several of the persons affected were some of the most prominent people of Greenville. The prominence of the people affected attracted considerable attention, and consequently about 1,400 people were vaccinated against smallpox. A thorough vaccination was carried out in the white and colored schools, with a result that only one very mild case of varioloid occurred among all the school children. The continued spread among the unvaccinated led the board of aldermen of Greenville to pass a quarantine regulation under the direction of the health officer and at his discretion. A compulsory vaccination law for the entire neighborhood where smallpox was existent was also passed. This has been in operation for about one month, with a result that while no new cases have occurred in the vicinity of the known cases, still isolated cases have continued to occur all over town with clock-like regularity, in spite of the large outlay that the board of aldermen have made in supplying food and wood to the colored population of the town. Some of those quarantined absconded after obtaining a week's board from the town. Others were more politic and remained indoors during the day. The board of aldermen were surprised at the way the bills mounted up, and they will be more surprised when they find out what little effect it has had on the spread of the disease.

Before I had had the above experience I had read about States abolishing quarantine laws as being ineffectual in the control of smallpox, and about the value of vaccination, but the above experience has firmly convinced me of the futility of trying to control smallpox by any other means than vaccination. However, my personal feelings about the matter will have to yield, for the present, at least, to public sentiment in Pitt County. A large number of people in Greenville believe in quarantine for smallpox, and I am afraid this is true in most of the towns of the State.

This being the case, probably some form of quarantine regulation will have to be adopted in the towns of the State to appease public sentiment. Along with this, some form of local or general vaccination ordinance should be passed, so that people will not rely on quarantine.

In Greenville the details of the quarantine are left to the health officer. I have been quarantining the patient and only those people in the household who have not been successfully vaccinated or who have been exposed to the disease longer than three days. If a person will submit to vaccination within three days after exposure, then he is not detained. I have consistently vaccinated everybody in the same block where smallpox has been, with no smallpox resulting.

The expense of smallpox quarantine is enormous. The benefits are largely imaginary. When the millennium comes we will have compulsory vaccination, and smallpox will be of only historic interest.

After all, the handling of the infectious diseases depends largely on the personal sagacity and tact of the officer in charge. The training one gets as a health officer is an excellent training for the diplomatic service.

Dr. L. N. Glenn, Gastonia: I take it that rural disinfection would have to do largely with disease-bearing refuse, either from sick individuals or elsewhere. It is customary in my county for the physicians to instruct, as far as possible, those of the family in which we have sickness in which disinfection is necessary, in the essentials of such disinfection, and as a rule we have very little difficulty in having such disinfection carried out. For instance, typhoid is generally guarded against by having the stools disinfected with quicklime or bichloride and having them carried out through the usual sewer systems, or, where this is not possible, having them buried with particular reference to the danger of contaminating water supplies near by. If there is any danger of polluting drinking-water, this is explained to the family and vigilant efforts are made to prevent the contamination of water supplies.

Slaughter-pens are frequently visited, and care is taken there to guard against the same thing. The topsoil from pens is frequently carried off and buried, after being treated with quicklime.

We have had trouble in some two or three cases in enforcing these regulations. Occasionally a man takes a contract in some town to carry off the excreta where there is no sewerage, and he frequently takes what seems to him the cheapest method. In such cases we look into the matter and see that the matter is treated with lime and buried.

I think if we could educate the people about such things and create a sentiment among the rural people in general, our work would be minimized. In my county, I am glad to say, most of the people are fairly well informed about such things, and very little of this contamination can take place without a layman notifying the county health authorities. We have very good coöperation on the part of the public, and we have it largely because the public is becoming wonderfully enlightened about such matters. We feel that our future is much better than our past in so far as coöperation on the part of the public is concerned.

I think if you would enlighten the public in regard to these matters, and in that way obtain their coöperation and support, the work would become much less difficult.

Dr. William M. Jones: I have had some experience in trying to obtain morbidity reports. I realize the necessity of the health officer

getting accurate and prompt reports. The plan that Dr. Cooper suggested is certainly a very admirable one for the length of time that the schools are in session. We have virtually the same plan, except that the report is not made in exactly the same way. We leave stamped, addressed post-cards with the superintendent of every school, and as soon as he hears of a case of contagious disease he makes a report at once to the county board of health.

As to getting reports from physicians, I think the thing that has helped me the most in that way is a one-cent stamp. It is not the money value to the physician, but the fact that the post-card is ready. If they have a self-addressed, stamped post-card, they will make the reports much more promptly than when they have to hunt one.

In some schools in this county the teacher is on the roster of another county, and receiving half her salary from each, and the pupils may come from four counties. In such cases we have a good deal of trouble in making reports.

As to notifying the public, I find that in some cases the public gets the information before the physicians do. Where there is only a local special law, unless there is something to urge him on, the physician will not have the same respect for it that he would have for a State law. It is the same way with Federal and State laws. A State law will do more than a county law; so I think that some State law, to act as a support and to stand at the back of the county laws, will help in getting accurate morbidity reports.

Dr. W. S. Rankin: There are several interesting suggestions which come up in the discussion of this symposium.

The most fundamental principle touched upon by those who discussed this subject is the principle of whether the State or the county should control the contagious diseases, that is to say, whether it is a State problem or a local problem; and the question comes up as to whether it is part State and part local.

Dr. Jones, I believe, advocated the adoption of a State law for securing such reports. He did not state how the law should be enforced, but I presume he meant that the county should enforce the law.

There are about 10,000 cases of the four contagious diseases in North Carolina each year, that is, cases of measles, whooping-cough, scarlet fever, and diphtheria, with about 1,000 deaths. So there are about 100 cases in each county each year.

As to the control of these diseases, suppose we say that the State should enact the laws. The States does so, writes the directions and puts the penalties where they ought to fall, or else gives the State Board of

Health power to make these regulations, as is the case in some States. It seems to me that if the State assumes the responsibility of drawing up the directions, it takes also the responsibility of enforcing its directions.

If I lived in a rich State like Massachusetts or Pennsylvania, or if I lived in a State with a large immigrant population—a population accustomed to a centralized form of government and more amenable to it than the people of this State—then I would advocate a State law for the control of these diseases.

It seems to me to be a fundamental principle of administration that the government which enacts a law should see that it is enforced, and that one government should not enact a law for another government to enforce, where the people insist upon local self-government. Why, if we should go into the General Assembly and ask them to enact a law for the control of measles in Guilford County, I do not believe they would enact it, notwithstanding the excellent representatives that county has sent there. They would say that the people of Guilford could enact their own laws.

Perhaps you will say that the State ought to enact the law and enforce it. But have you ever estimated the cost of controlling 10,000 cases of contagious diseases, scattered over 52,000 square miles of territory? I have estimated the cost, as nearly as I can, and it would be $50,000 a year—as much as we are spending on everything.

Under these circumstances, what does the State do? She says to the county, "We give you power to do anything you wish for the control of these diseases." I think that, under the circumstances, with the present economic condition of the State, and with the population she has, this problem is today a local problem. It may some day, when the State is wealthier and the people are willing to form a more centralized government, become a State problem, but I do not think that it is a State problem now.

It is a very easy thing to check a State government or a county government or a town government on its contagious disease control, or its morbidity reports. Of course, if the contagious diseases are not reported, the control of those diseases is worthless. How can you tell whether they are reported? Let us take Wake County. Say that last year there were 35 deaths from these diseases. Then, roughly speaking, there should be 350 cases. Suppose we go to Dr. McCullers' books and find that he has only about 100 cases reported. Well, he certainly did not get all the cases reported, because the combined fatality of the four diseases is 10 per cent, and every time there is a death there should be ten cases reported. You can easily check a health officer by checking his morbidity reports with his mortality reports.

Dr. Cooper has spoken of the reports he got through the teachers in the schools, and through the school health officers. Now, there is still a third way which has been worked out, and which I think is capable of producing results. In two or three or four newspaper articles state to the people the importance of reporting contagious diseases and the need of physicians reporting. Say to the people that in the county paper, at the end of the month, you will publish a list of the names and addresses of the cases of measles, etc., for the preceding month. Tell them that if they know of a case not reported, and they will report it, the health officer will see that the penalty is enforced. If a man is interested in health and will report one of these cases, giving the name of the physician treating the case, the health officer will prosecute him. I think the health officer should go before the medical society and tell them that the first time a case is not reported he will write a letter calling attention to it, but in case of a second violation he will indict the physician responsible. You have to prosecute occasionally.

These three ways that have been mentioned—the report by the school teacher, the report by the pupil, and the report through the newspaper—will be of great assistance. Of course, in case of a prosecution, the name of the informant will not be given.

In regard to rural disinfection, Dr. Glenn referred more particularly to disinfection after typhoid fever. I wish to speak about disinfection after the contagious diseases. I believe the best municipal officers in this country have stopped fumigating after measles and whooping-cough. The health authorities of the city of New York stopped disinfecting after diphtheria because they proved, after a very thorough examination of the articles in the room likely to be infected, that when the patient was well the bacteria were dead, *i. e.*, when the germs had died in their natural host they had also died on articles in the room.

This leaves disinfection only after scarlet fever. We are recommending to county physicians who consult us that they get six or eight large lard cans, six or eight packages of formalin, and gummed tape, and leave these articles with a druggist, so that the people can get them whenever the county physician or health officer is away. Let it be known that when a person has a case of scarlet fever in his household he can get this fumigating outfit. With it goes a little booklet of directions. We believe it is a good plan to leave them in the drug store, because the health officer might be away and some one come in from the country to get the outfit.

The State Board of Health has spent a great deal of time on the subject of rural quarantine. There are no books to be found on this subject. It is new ground, and you have to work your own way through. We

have spent a great deal of time on it, and have worked out a full set of regulations, and will be glad to advise any health officer who wishes to consult us.

I do not advocate fumigation after measles, whooping-cough, or diphtheria. We do advocate a thorough cleaning of the room.

We recommend formaldehyde as the routine disinfecting material, except when you want to kill insects. Then you use sulphur, except in a room with carpets, pictures, etc., in which case hydrocyanic acid should be used. But the health officer himself has to disinfect with hydrocyanic acid.

Dr. Charles T. Nesbitt: We have been able to attack the problem of morbidity reports in this way: Every house in the county is visited once each month; every house in the city twice each month. It is the duty of the inspector to learn what illnesses have occurred in each house, and it is his duty to bring in the name of every case of contagious disease that has occurred, together with the name of the attending physician.

Dr. Rankin has spoken of indicting physicians. Any health officer who has had to do with the courts will learn very quickly that the courts consider health regulations as matters not of primary importance, to say the least. If you have a court of first instance, such as we have, you will find that each official has his ties, his political obligations, and he has his hampering influences. The people themselves are inclined ordinarily to view the health regulations as matters tacked onto the penal code and not of great importance. We have had quite a bit of experience in that line in preparing for prosecutions. In these courts of first instance the defendant has the right to ask for a jury trial, and it is exceedingly hard for a health officer to get a man convicted by a jury. The health officer will have to make up his mind to do without the help of the courts as much as possible in his work.

In one case a physician was prosecuted for not reporting births. He said in court that he did not propose to violate the confidential relations existing between himself and his patients, and walked out. Physicians have arrogated to themselves considerable freedom from ordinary human limitations, and we health officers will cripple our influence if we try to enforce sanitary laws by indiscriminate prosecutions. Very rarely you will find a physician who will refuse to report cases of contagious diseases. If you will ask physicians about cases in their practice, they will get into the habit of calling you up. They will not write you, but they will call you up on the telephone. In that way we get the name and address, and send our inspector back to the house and get the rest of the information. We usually get a pretty full report on these diseases.

We are not having very much malaria in New Hanover County now. It has been a reportable disease for about four years. Dr. Wood told me the other day that he had been making routine blood examinations for the last three years, and in that time had found just three demonstrable cases in his practice.

We have gone a little further with the disinfection problem. Most of the disinfection we do is done to satisfy the public. We have an officer for that work. His instructions are to go into the house and himself supervise the cleaning of the sick-room. He is to see that everything is turned out and the room thoroughly scrubbed and cleaned. Then, if the people of the house desire it, to satisfy them, he will fumigate. We dispense with the fumigation in many diseases, even in tuberculosis.

We put all cases of diphtheria under laboratory control, first for diagnosis and second for quarantine. Inside of sixty days after this ruling, with the making of a good many negative examinations, the diphtheria incidence dropped 50 per cent, and since that time it has dropped much more. There was error in diagnosis.

We have gotten the negroes so much afraid of tuberculosis that they are perfectly willing, when necessary, for us to take everything that has been in the room—mattress, bedding, towels, etc.—to the incinerator and burn it. We have a little tuberculosis hospital, and when we hear of an indigent tuberculosis patient we take him to the hospital and clean the house just as though the case had terminated there.

Dr. J. R. McCracken, Waynesville: I would like to ask Dr. Rankin what would be the instructions of the State Board of Health in regard to handling cases of acute cerebro-spinal meningitis.

Dr. Rankin: In answering requests of that kind that have come in in the past few years, we have sent the pamphlet of the United States Public Health Service on that disease. The most interesting thing about that pamphlet is the acknowledgment of the author that practically nothing is accomplished by isolation.

Dr. R. M. King, Concord: We had quite a little smallpox in Cabarrus County. There was no compulsory vaccination, and of course it has spread. The only thing I see for it, of course, is vaccination. Quarantine does not amount to anything.

Dr. C. V. Reynolds. Asheville: The first thing that I believe we should have is *unity of laws.* One county being allowed to do as it pleases, while another has laws and regulations governing the control of contagious diseases, at least works a hardship upon the county in which the law is carried out. If the State would have what might be termed

a minimum law, providing minimum regulations to be carried out, throughout the State, and then allow the counties to increase that as they see fit, it seems to me that such an arrangement would be a great step in advance.

Different counties throughout the State vary in opinion in regard to the governing and control of smallpox. Personally, I believe that you cannot control smallpox unless you have vaccination—not voluntary, but compulsory—and also have positive and legal control of the case infected. I do not suppose that the laity is sufficiently aware of the importance of vaccination, or at least the inborn desire to postpone and procrastinate deprives us of the control of smallpox. I suppose you are all aware of the epidemic at Niagara in 1912, 1913, and 1914. In this place the city officials, the city attorney, the mayor, and the people were antivaccinationists. They did not require vaccination, and the people did not become vaccinated, resulting in five hundred cases of smallpox in one year. Not until the State authorities threatened—and I believe they placarded the trains going in and out of Niagara, forbidding passengers to get off or on unless vaccinated—did the people begin to recognize the economic loss and enact a vaccination law and enforce it. After that, they stamped out the epidemic in three months. Eighty-seven per cent of the people that had the disease in Niagara had never been vaccinated. Doctors are like other people—procrastinators. I dare say that if you would ask in any gathering of doctors how many had been vaccinated during the last five years, not many would say they had been.

We are vaccinating the school children in our county, and I am glad to say that we have not had a case in five years, except imported cases.

I cannot see the wisdom of educating people to the value of fumigation, that there is a germ there which will produce disease, and that unless fumigation is done they will have the disease, and then immediately turning around and saying that the germ is dead when the patient is recovered, even though thorough investigations have been made. I know that you can have three or four strings in a room in a culture solution, and some will have dead germs and some living. We do not know how long they are going to live. We do not know who will enter the room. But we do know that if the germ is there, fumigation, if properly done, will destroy it. To carry out the instructions of the New York authorities without fumigation is certainly more expensive than fumigation. I believe that if we have the case in room quarantine, and have a sheet dipped in bichloride of mercury and hung before the door, it will have its effect upon the family.

I do not know why we take such rigid measures with the tubercle bacillus and not with others. We do not know whether it will live in a

dark room any longer than diphtheria. Phthisiphobia is due to the rigid rules we have enforced about tuberculosis, because tuberculosis is a chronic disease. We have it a long time, and we have to fight it all the time. I do not believe we are accomplishing what we should, and I think we have gone too far in the fear of tuberculosis. If we teach people to fear, not the patient, but the sputum, we would not have so much trouble in the eradication and control of tuberculosis.

Dr. Nesbitt: In dealing with the negroes, among whom we find much of our tuberculosis, we teach them that the danger is in the contaminated thing and not only in the patient. We teach them to scrub everything impermeable and to remove everything that is infected.

Dr. Rankin: I think everybody knows that I pin my faith to vaccination for the control of smallpox. I do not believe in quarantine, not for a second.

Some time ago I heard some criticism of one of the whole-time county health officers. He was criticised for spending so much money last year. He spent, I think, some $6,600, which was the total cost of the health work in that county that year. I spoke to a friend of mine and asked him if he did not think it was too much. This friend of mine investigated, and he found that this health officer had been compelled by the people of his county to spend over $3,000, almost half of his expenditure, for quarantining smallpox—putting it in the pesthouse.

Dr. E. F. Strickland: We had some trouble in Forsyth County during the past winter with smallpox, and we let it be known positively to the public, by newspaper publications and by placards in the communities which were infected, and by visitation, when necessary, to infected sections, that the only relief the people might expect was through vaccination.

A minister called me up one day—a young, very highly educated and popular minister—to tell me that a man known to have smallpox was going about on the street cars and into the stores, and he said the situation was distressing, and that he knew I could not have heard of it. He wanted to know what he could do about it. I said, "Be vaccinated." He said, "You don't mean to say that that is an absolute protection!" I said, "Yes." He said that he could put his hand on people who had been vaccinated and who had had smallpox afterward, but he could not tell me where they were. He said, "But some people are opposed to vaccination; some have lost their arms through it." I asked him where. Again it was a long way off. Well, that man and his wife were vaccinated a few days later, and just a day or two ago he came into my office to take the typhoid vaccination.

In one of our mill communities we had an epidemic of smallpox, mostly of a mild type, but there were some few serious cases, and the people began to get waked up and get vaccinated, and the disease was thus controlled. Then the superintendent of a manufacturing and industrial establishment, in another direction, called me up and reported a case, and asked what was to be done. I recommended vaccination, and he asked me to come over and see him. A lady over there advised her superintendent to require the people to be vaccinated or to leave her employment. This was done, and ninety-six people were vaccinated the next day, and no other case developed. Smallpox can be controlled by vaccination.

As to the reporting of contagious diseases, the physicians report the cases to me. In two instances during the last year it has not been done, but letters to the physicians brought the reports.

Dr. J. E. Malone: I almost wish sometimes that some one with smallpox would die in a community. It would be a great object-lesson. People say of smallpox, "They don't die," so I wish sometimes we would have a death from it, in order to convince them of the importance and the immunity they receive from it, that is, from smallpox, by vaccination.

The people are instructed how to handle stagnant water and mosquitoes. The sheriff of the county loaned me about ten convicts and I had all the ponds in and around my town ditched, drained, or filled up. The people in the country are advised to do likewise. We are trying to introduce the sanitary privy into every home in the county.

Dr. M. T. Edgerton: In regard to the value of vaccination, we had one example that was conclusive. In a camp of fifteen men about one mile from town there were about eight cases of smallpox. Not one who had a good scar contracted the disease. Every one, except one, who did not have a good scar did contract the disease. They all slept in a camp together.

While it is true, as Dr. Reynolds says, that the tubercle bacillus will die in a few hours in the sunlight, still it will live for months in dark, moist places.

Dr. Reynolds says we have to fumigate for its mental effect. It seems to me that the most important thing is to see that there are no bacillus carriers among the family. The disinfection of the house, the unnatural habitat of the diphtheria bacillus, is only of secondary importance, while the throat, the natural habitat of the diphtheria bacillus, should give a negative culture before quarantine is removed.

PLAN, MACHINERY, BUDGET, AND PROBABLE RESULTS OF COUNTY FIGHT ON TYPHOID FEVER.

Dr. M. W. Steele.

This subject becomes one of intense interest. I myself am especially interested in seeing perfected a system of plans by which we may be able to conduct intensive and effective campaigns of antityphoid vaccination in the counties. As is no doubt pretty well known at this time, arrangements have been made up to the present time with ten counties, wherein the board proposes to conduct such campaigns, coöperating with the local boards of health.

The plan of procedure is being perfected, or has been pretty nearly perfected, and I believe that plan is a very simple one. The first step has been to solicit the indorsement of the boards of commissioners, asking them to make a sufficient appropriation from the county funds to meet the expenses of the work in the county, at the same time getting the indorsement and approval of the county medical societies. I think it would be unwise to start such work in a county without first having the indorsement of the county medical society, of the board of education, and of the people in the county. I am glad to say that in these counties where the campaigns are to be undertaken we have almost the unanimous indorsement of these bodies.

That vaccination prevents typhoid is no longer to be questioned. We would not have the people suppose for one moment that this method should in any measure supplant the common rules and regulations of sanitation along that line.

The next step, after having made the preliminary arrangements, financial and otherwise, is to get the proposition clearly before the people. This will be done through the press, making clear to them, so far as is possible, the simplicity of the administration of the vaccine, and impressing upon them the fact that the vaccination can be depended upon to keep them from having typhoid fever.

The dates are fixed for the work to be done at various stations throughout the county, and advertised by having it published in the county papers, and also by little handbills distributed throughout the county. These notices make it clear that it is to be absolutely voluntary and that there is nothing compulsory about it. The ministers are asked to announce the dates of the dispensaries and to urge the people to become vaccinated.

This is a new scheme that has not yet been tried out, I believe, in this or any other State, but its success seems to be assured beyond any question, judging from the encouragement given in the various counties where this work is to be undertaken.

In order to carry on this work successfully, we must necessarily have in each county at least two physicians, or one physician and a medical student for his assistant. These two men will give their entire time to the particular county, devoting six weeks to visiting various points in the county, meeting the people at intervals of from seven to ten days. Those counties in which the work will begin next Monday are Henderson, Buncombe, Wake, Cumberland, and Northampton. After the six weeks work in these counties, the men will be shifted to five other counties.

Following out the plan we have mapped out, I believe that we shall not be satisfied to vaccinate in any one county fewer than 5,000 or 6,000 or possibly 8,000 people, and I feel reasonably sure, from the encouragement that has been given this plan, that we shall vaccinate as many as this. I see no reason why the people should not readily respond to this plan.

It is also to be a campaign of education along lines of sanitation. Mr. Booker, whom you all know, has gotten out quite a number of charts and placards to be used at the dispensary points, and these will be of aid in bringing out the people. He has also gotten out a number of lantern-slide lectures that will be used in the dispensary work, the plan being to give, if possible, stereopticon lectures at night, previous to the administration of the vaccine on the following day.

Since I have not prepared any paper on this subject, and since Dr. Cooper, the chief of the Bureau of Rural Sanitation, and Dr. Rankin and Mr. Booker, the promoters of this scheme, are present, I feel that in justice to you I should give way, so that you may hear from these gentlemen.

INTERESTING COMMUNITIES IN A GENERAL COMMUNITY CLEAN-UP.

Dr. J. T. J. Battle, Greensboro.

It is strange that it should be so, but it is nevertheless true, that the average man will use more precautions to take care of his property than of his health or that of his family. When he does not realize the importance of the health of his own, it is unnecessary to say that he is not

concerned in the sanitary welfare of the community. He is willing to contribute to the building of a church for the purpose of taking care of his spiritual condition; he is willing to coöperate with his neighbors to better his financial condition; the first because it has been instilled into him from his youth up, the second because it is an immediate realization of the good that coöperation does in saving him some money. To improve the general healthfulness of the community is not so evident, because he has not seen it, nor has it been driven into him by precept.

Environment has more to do with shaping a man's life than any other factor; and when the surrounding neighborhood is enlisted in sanitary work it will stimulate each and every individual, as it is really contagious and spreads quite rapidly when the fever is high.

To suggest ways and means whereby this interest may be created and stimulated is the object of this paper.

It is necessary to get as large a number of people together as possible. To do this, it will require some attraction: a man with a reputation as a good talker, and from whom they expect to learn something worth while. If such a man can be induced to take the lead in the community he will do great good. As a rule, two speakers will draw a greater crowd than one, especially in the rural communities; and as most of this State is made up of rural communities, these will be dealt with most extensively.

First and foremost of all are stereopticon views. When it is noised abroad that one or two men with stereopticon pictures will be at the schoolhouse on a certain night, there is no doubt of having a crowd. The young, the middle-aged, and the old-aged are all interested and will be present. I have never seen an audience tire of pictures on almost any subject. Every county ought to have a lantern for this purpose, for it can be used as a means to get out the crowds, and the right man can stimulate the interest and accomplish a great deal of work.

For a clean-up campaign, nothing that I have ever seen tried equals the school children. They can be readily organized into teams, will take a great deal of interest in it, and do splendid work. The girls take as much interest as the boys, and do as good work. They are impressed with the good work, catch on to it quickly, and believe in it, while the fathers and mothers are slow to see how much good can result from it, and even if stimulated to believe it, they relapse quite frequently. It is exceedingly hard to hold the interest of the older people to the importance of having the stable cleaned out to get rid of flies, or to see that the well is covered up so that the hands can never come in contact with the water bucket. These two propositions are the most difficult to get them to coöperate in; and much to my surprise, I learn of some of our own

profession who do not advocate covering up the wells, and believe that they should be kept open for free circulation of air, not realizing that it also means circulation of disease germs.

Truths told to the younger minds, which are credulous, are indelibly impressed. An instance happening in my own house demonstrates this difference between the impression made on the young and on the old. A boy 13 years of age, who is employed to do the chores around the house, came to my wife a few days ago and suggested to her that some things were going wrong, and asked if he should tell her. Upon her saying that she thought it was right that she should know of anything that was being done that should not be, he volunteered this information: That Mrs. S. (our cook, who is past middle age) was yesterday out in the yard playing with the chickens, and had them up in her hands even, and then went into the house and made up our biscuit without washing her hands.

Another most valuable aid is the woman's civic club. While every town possesses one of these very valuable organizations, the rural communities are not so organized; but this can be done; and getting the women into such an organization and getting up some enthusiasm will revolutionize the sanitary conditions of any vicinity. While putting their surroundings in a more healthful condition, it will cause them to have more home conveniences, and thus give them more time for such work, and make life more enjoyable; they will not only increase their number of years, on account of eliminating typhoid fever and other diseases caused by unsanitary surroundings, but these home conveniences will relieve them of the drudgeries which are too many around every farmhouse.

Two other most important organizations which can be made exceedingly effective are the Girls' Tomato Clubs and the Boys' Corn Clubs. These are ideal organizations for such work, and it will only be necessary to get one in each club thoroughly aroused and it will be taken up by every member of that club. What seems impracticable and looks to be impossible, with a little vim and determination can be readily done, as the writer has demonstrated in the organization of the tomato and corn clubs.

In the cities, especially in the negro districts, among washerwomen peculiarly, where they are catching water in every basin and storing it up for laundry purposes, they are raising thousands of mosquitoes. Some of the best and most satisfactory work that I have ever witnessed was done by a Sunday-school class of negro boys, with the promise of a watermelon feast when the job was complete. I have nothing to suggest to make negroes work better than watermelon, for when the dark suitor

told his dusky damsel that she was as sweet as "watermillion," that was the strongest expression he could possibly use; he had exhausted the English language.

Again, picnics could be arranged; for instance, let it be understood that at the schoolhouse on a certain day there would be a picnic; and at this time have some speakers to talk on sanitation. Let every boy come prepared to help beautify, lay off and arrange the grounds around the building, while the girls decorate the interior. The lesson learned in this way would have its influence on every person present, and the homes would be cleaned up and beautified from this influence.

At the farmers' unions one person could be appointed to make a five-minute talk at the next meeting on something that he had done on his own farm to improve the surroundings.

Still again, a certain Sunday in the year could be set aside to have a health talk in Sunday-school, and get the preacher to devote a certain length of time in his morning sermon to health conservation.

There are families in every rural community who do very little reading indeed, some not even taking the county paper. These could be learned, and their names sent to the State Board of Health, and let their literature be sent them. This is a very valuable contribution to our health work, for it is gotten up on a high plane, and is full of valuable information. There are few periodicals that will do as much good as the Bulletin of the North Carolina State Board of Health.

During the school terms the superintendent can find some man to offer a prize for the best essay on "Health: How to Get It and How to Keep It," or some such subject. Then let that be published in the county paper, and it will make that community take more interest in the county paper and community affairs.

It is very important to enlist the coöperation of the newspaper. This can be done almost without exception, for the editors have shown themselves broad-minded and liberal, and their influence is tremendous, especially when exerted along right lines.

This is a process of education, and no opportunities should ever be lost to impress the importance of such work upon all the people.

Mr. L. M. McCormick, Asheville: The mosquito question which Dr. Battle spoke of is one which all communities have to fight, and we found that even in Asheville there were certain localities that had mosquitoes. The most effective thing we ever did in that regard was to bottle mosquitoes. Take a common milk bottle, and when mosquito larvæ are found in tin cans, don't destroy immediately, but put a good supply of larvæ and pupæ, label with the date and place where found, and place

in a conspicuous window. Usually in a day or two the mosquitoes will begin to appear, and a surprising number will come out of the water and rest on a cork or other raft floating on the water. Such a demonstration, in negro localities and in schools, has done more toward eliminating breeding places where mosquitoes have been than anything else that I know of. The school children especially like to see the real thing, like to see things move, and in teaching them to get rid of mosquitoes this plan, which is very simple, has proved very effective. The same thing is true with flies and other annoyances. If you can get the real thing before the school teachers and children and the carpenters and blacksmiths and stable-keepers, you are going a long way towards solving the problem of enlisting their intelligent coöperation.

Dr. B. W. Page, Lumberton: I have listened with great interest to the valuable paper by Dr. Battle. It is sometimes very difficult to interest communities in a general community clean-up, and I have largely confined my activities to educational lines. It appears to me that the best results can be accomplished by classifying the principal preventable diseases into two main groups: First, those that are spread from the secretions of the nose, mouth, throat, and lungs; the winter diseases, such as measles, whooping-cough, scarlet fever, roseola, influenza, pneumonia, tuberculosis, smallpox, chicken-pox, diphtheria, mumps, and some of the bad colds, all of which result for the most part from poor ventilation in the home and schoolroom, the common drinking-cup, etc. The second group would include the filth diseases gotten from the excrement of the diseased individual afflicted with typhoid fever, diarrheas, hookworm disease, and possibly pellagra, which are controlled largely by the clean-up campaign. The public must understand the mode of infection before coöperation can be secured. Enlightenment along these lines is essential before much interest is manifested. A health officer can arouse a community through lectures, distribution of literature through the press and successful demonstrations through typhoid and smallpox vaccinations. After all, results are necessary to secure interest in a community clean-up, and success can be attained by these and other means mentioned by the essayist.

Dr. J. W. McNeill, Fayetteville: A moving picture show man in Fayetteville started a campaign for gathering in tin cans. His establishment gathered in nearly 50,000 cans. It was a regular little mountain that he had in front of his place; the gathering was the work of boys and girls for three or four days. It was then started in the colored moving picture show, and I do not think there was left a can within a mile and a half of the center of Fayetteville. One boy collected 1,230

cans, thereby getting 123 free tickets to the moving picture show, there being one ticket given for every ten cans turned in. The arrangement was good for the moving picture show man and I am sure it was wonderfully good for the health department. It has worked like a charm. If mosquitoes are to be bred in tin cans, I do not think there will be any at all in Fayetteville this year.

THE FIRST ESSENTIAL IN FIGHTING THE GREAT WHITE PLAGUE: AN EARLY DIAGNOSIS.

HENRY F. LONG, M.D., STATESVILLE.

The work of the North Carolina State Board of Health and that of Dr. Rankin has attracted much attention and many favorable comments throughout the United States. Even the United States Senate has not overlooked this work.

I am proud of our health organization and appreciate the privilege of being with you today.

Preventive medicine is the only means of eliminating many diseases which, when once contracted, can be combated successfully only when there is an early diagnosis.

Tuberculosis destroys annually in North Carolina more than 6,000 people. Only by the most active and energetic work on the part of the medical profession can this terrible mortality be cut down.

Many years ago appendicitis, gall-bladder disease, and, in fact, few intra-abdominal conditions were diagnosed until the patient reached the mortuary slab. But McBurney taught us how to diagnose appendicitis, and Tait and Sims taught us about gallstones. Then surgeons began to operate for these conditions; but the mortality was very high. Even within the last decade the mortality in all intra-abdominal troubles has dropped at least 10 per cent, and yet it is my firm belief that the surgeons who operated fifteen and twenty years ago did just as skillful work as we are doing today.

Who believes that there is today a surgeon at the University of Pennsylvania more skillful than Agnew and White? Who is a better technician at the University of Maryland than L. McLain Tiffany? Who believes that Jefferson has a more skillful surgeon than W. W. Keen? Richmond has not today a better man than Hunter McGuire, and New York has no better man than W. T. Bull. And yet the mortality in surgery has decreased each year. The surgeon no longer waits for a

tumor to appear in appendicitis, jaundice in gall-bladder disease, or for the axillary lymph nodes to enlarge in tumor of the breast, before operating.

The low mortality in surgical diseases is due more to early recognition than to great improvement in surgical technic.

If we will profit by this lesson and apply the same rule to pulmonary diseases, and diagnose tuberculosis before tubercle bacilli are found in the sputum and before the clerk in the drug store suspects that the patient who is taking cough medicine has consumption, then the mortality from this disease will drop, for early diagnosis is the only hope of effecting a cure. In addition, the patient is warned in time to take precautions preventing the infection of others with whom he comes in contact.

Physicians should make a thorough physical examination of the lungs of every patient. I will not take up the symptoms and physical signs in tuberculosis. These will be found in any good text-book on medicine or medical diagnosis. But I wish to emphasize a few points that we have found of great help:

1. Do not be in a hurry about making a final diagnosis. Get an accurate history of the development of the patient's condition, and especially a history of exposure to infection.

2. If there is any doubt, go over the patient's lungs two or three times, at intervals of a day or so, taking an hour for each examination, if necessary.

3. Give the patient a tuberculin test. The von Pirquet test is good and can be applied with little trouble. A positive tuberculin reaction, though, does not necessarily mean that the patient has an active tuberculous lesion.

It is possible in this way to diagnose many early cases which otherwise would progress to a point beyond reasonable hope of recovery.

As a surgeon, I frequently see apparently surgical and gynecological cases which are due really to some form of tuberculosis. For example: I recently saw a patient, a girl of 20, who had never menstruated. Her pelvic organs were normal, but she had an advanced pulmonary tuberculosis which had never been suspected. Such instances put us on our guard and impress us with the importance of giving every patient we see a thorough and complete examination, for only by an early diagnosis can we hope to arrest the disease and at the same time warn the patient to take such precautions that others will not be exposed to infection.

Dr. J. Howell Way, Waynesville: I want to thank Dr. Long personally, and also on behalf of the Health Officers' Association, for his interest in preparing this paper. My only criticism of it is its brevity.

It was so good that it ought to have been longer. I want to thank him, as a surgeon, and as one of North Carolina's great surgeons, for his interest in this subject and for his coming today to be with us and to read this paper. Certainly he is on the right line. When he was reading that paper I sadly recalled having been summoned to a near-by town last February to see a girl, beautiful, accomplished, a senior in one of the leading schools of this State, and who would have graduated this year. She was sent to Dr. Long's sanatorium, and he sent her home. She gave me a history of having, in the autumn of last year, been in the college infirmary with the diagnosis of having malaria. Malaria is a common word; I hear it a few score times each summer. Ofttimes it is used in the summer to cover an incipient tuberculosis.

I was interested in what Dr. Nesbitt said this morning about Dr. Wood of Wilmington, whom we all recognize as one of the most accomplished physicians in the State. Dr. Wood told Dr. Nesbitt that he had only a very few cases of malaria in his practice in a given time; these cases being determined by routine blood examinations.

We talk about people going to a specialist to have their lungs examined. When you begin to think of 6,000 people dying in North Carolina in one year from tuberculosis, it seems to me that if you consider it seriously for a moment you will agree with me that every man who practices medicine has to examine the chest almost every day, and if he has any reason to suspect that any patient is at all possibly seriously sick, the chest must be examined with precision. And, as Dr. Long says, don't be in a hurry. Let the patient come back for another examination. If we would all do that, we would diagnose tuberculosis very much oftener than we do, and by diagnosing it early—early, I say—we would save many of these cases from untimely graves.

Again, Dr. Long, we are very glad that you are with us, and we thank you for this paper.

Dr. Long: I wish to thank Dr. Way for his kindly notice of my paper.

Sometimes one of the very first symptoms of tuberculosis in the young female is menstrual disturbance, and they at once suspect pelvic disease and consult a surgeon.

It is not easy to diagnose early tuberculosis. It is very hard to do sometimes. I have kept patients at Statesville, where I have a small hospital, for as long as ten days, knowing they had no other disease, and trying to determine whether or not they had tuberculosis. It is not always easy to detect tuberculosis, but it can be done, with patience and labor, and it must be done if we cure our patients.

WHAT THE STATE AND YOU CAN DO FOR THE CONSUMPTIVE.

THOMPSON FRAZER, M.D., ASHEVILLE.

In recent years we have had to change many of the views which we once held on the subject of tuberculosis. With regard to the curability of tuberculosis, you all remember the time when we looked upon the disease as a hopeless one. Not long after this—veering about to the other extreme—we adopted a hopeful attitude, which, in turn, has been forced to give way to the view which we now hold, and which maintains that tuberculosis is curable, but curable only in the early stages and if properly treated.

In many other respects have we modified our opinions of former days. None of our more recent views is of greater importance than that which is implied in the title of this paper, "What the State and You Can Do for the Consumptive," which is tantamount to saying that the responsibility for the cure of the disease does not rest on the patient and his physician alone.

This conception is a somewhat new one; for it has not been long since we did look upon tuberculosis as the patient's own affair; we hoped he would get well, poor fellow; but if he didn't, it was scarcely our fault.

Happily, we have changed all this. We now realize that tuberculosis is not simply the personal problem of the unfortunate sufferer, but a disease with vast sociological relations, and one whose eradication depends upon the combined effort not only of patient and physician, but of State and every individual as well. Now, while the practicing physician has a great responsibility to bear, in that an early diagnosis—so essential to a cure—is demanded from him, it must be remembered that an early diagnosis, though essential to a cure, does not spell cure. The physician, no matter how willing, cannot work miracles. And while the patient, no less, has it in his power to devote his will and determination to getting well, there are some conditions inherent in the nature of the disease which make recovery difficult of attainment.

In the first place, tuberculosis is a disease of early life. Secondly, it is a disease which is most prevalent among those in moderate or straitened circumstances. Thirdly, tuberculosis is a chronic disease, taking months or years to "cure" or "arrest." Who, I ask you, is to pay for a course of treatment—which, first of all, consists of stopping work for a period, let us say, of six months, for an early case? Not the sufferer;

when he stops work, his income stops with him. Who is going to teach him to live so that he shall not be a source of danger to others?

These are some of the questions which must be answered by the State and by you. Before offering any suggestions on the solution of these problems, I shall first attempt a brief review of some of the facts which have a bearing on the subject of tuberculosis, believing that an appreciation of the conditions which underlie the disease will best serve to point the path which we must follow.

There are two facts, fundamental to the proper understanding of tuberculosis, that must be borne in mind. The first of these is, that tuberculosis is an infectious disease; the second, that it is a sociologic problem.

It is, of course, known to all of you that tuberculosis is an infectious, a communicable disease. Now, this does not mean that it is contagious in the sense that measles and smallpox are contagious. Much of the fear of consumptives is unwarranted; at the same time we are safe in saying that most cases of tuberculosis are the result of the taking into the body of germs, the source of which is the dried-up sputum of consumptives. We are also fond of saying that tuberculosis is preventable—and it is, theoretically; but as long as we do not destroy the infectious material it is not preventable. I may be drawing down upon me the wrath of those who maintain that tuberculosis is preventable; the fact confronts us, however, that as things stand today, it is not preventable. It *should* be, it *could* be; but, under existing conditions, it *is not*.

This is a sad commentary on our civilization, but the reason is not far to seek; for tuberculosis differs from most of the infectious diseases in being of a long-drawn-out nature. In typhoid fever, for instance, the relation between infected food or water and an outbreak of typhoid fever is more apparent; cause and effect are close in time and space. In tuberculosis, however, we don't so readily see the relation between infection and the development of symptoms, for years may elapse between the time that the individual is infected and the time that he breaks down in health; that is, the disease may exist for a long time in what is called the latent stage, without giving rise to symptoms. Indeed, we now regard tuberculosis in the adult in many if not in most cases as the result of an infection, which, taking place in childhood, was carried about for years and did not cause symptoms until the strength of the body or, as we say, the resistance was lowered as the result of unhygienic living or unsanitary conditions, such as hard work and long hours, insufficient sleep, dark, unventilated quarters, poor food, and not enough of that.

This brings us to the second point which I wish to emphasize, viz., the sociologic and economic aspect of tuberculosis; for, though the tubercle

bacillus is the actual exciting cause of the disease, equally important are the conditions which act as predisposing causes. These two causes, the actual and the predisposing, often go hand in hand, with poverty and ignorance leading the way. It is no wonder that tuberculosis increases as we go down the social scale; for in the dirty, overcrowded homes of the poor who are ignorant of the most elementary rules of hygiene the germs spit upon the floor by the untaught consumptive easily gain entrance into the bodies of other members of the family, especially the children playing about the floor; so that we may confidently look forward to the production of a new crop of consumptives in the coming generation, when—as the result of a scanty living wage or unsuitable quarters or insufficient food—the resistance to the infection is overcome. Thus, poverty supplies both the seed and the soil.

This endless chain has been forged for countless centuries; it is being forged now. There is this difference, however: that we can no longer plead ignorance of the fact.

With conditions as I have painted them, what chance has the poverty-stricken invalid for recovery? In the face of these facts, what can the physician accomplish, unaided, in stopping the spread of infection? Nothing, or almost nothing. For we are not dealing with a disease alone, but with a sociological condition—crime, if you will. It is only by united efforts that we can get results. Each and every one of us must put his shoulder to the wheel.

It would take us too far afield to discuss all the details which go to make up the Antituberculosis Crusade. I shall attempt, however, to indicate briefly the steps which should be taken by the State and by you. From what has been said, it is plain that the problem which confronts us is really a double one, viz., the "cure" of those already affected, and the prevention of the infection of others. Our efforts must embrace the two.

WHAT THE STATE CAN DO.

Looking at the matter from these two angles, what can the State do?

1. To accomplish the "cure" of those already infected, there should be established and maintained a clinic or free dispensary, so that the sick individual may be examined by one familiar with the disease in order that a diagnosis may be made at the earliest possible moment.

2. There should also be maintained by the State a sanatorium or sanatoriums large enough and with appropriations sufficient to care for the great numbers of indigent early cases who must otherwise succumb to the disease.

3. Bearing in mind the large number of children who are already infected, the State should support a far-reaching policy of school inspection, with examination of suspicious cases; this to be supplemented by the institution of fresh-air schools for children whose physical condition is found to be below par.

To check the spread of infection, which is as important as to attempt to relieve those already diseased, there should be required:

1. Compulsory notification by physicians of cases of tuberculosis. This is the only means by which we can even attempt to keep informed of the number and location of cases.

2. In addition to laws looking toward this, there should be employed a properly qualified, whole-time health officer whose duty it should be to see that these and other laws are rigidly enforced.

3. The maintenance either by the State (or by some charitable organization) of the visiting nurse. This has been undertaken in many communities, and cannot be too strongly recommended. Going into houses in which tuberculosis has been reported, she becomes familiar with home conditions, advises the patient to go to sanatorium or hospital, reports the presence of other suspicious cases, gives instruction in hygiene, etc., etc. She is of great service, therefore, as a means of discovering disease and starting the educational campaign.

4. Valuable as the above measures have shown themselves to be, they will not avail us much unless we have some means of caring for the advanced cases who spread the infection. To this end a hospital where the helpless, ignorant, careless, willful, and dangerous consumptive can be taken care of must be looked upon as one of the most important measures of safeguarding the community.

WHAT YOU CAN DO.

One of the most important things you can do is to stand by the State, for without support of the individual the State can do nothing. This, however, is not the only thing that you can do: your sphere of influence is a large one, if you wish it so.

We have seen that the economic aspect of tuberculosis is no less important than the infectious aspect. We have learned that poverty is a great predisposing cause of the disease. While I shall not suggest that you attempt at once to abolish poverty, there is much that you can do in seeing that child-labor laws are not only enacted, but enforced, and that factory inspection results in better ventilation and better sanitary conditions. While the assurance to the working classes of a living wage which shall enable them to have enough to eat for themselves and their children,

which shall provide better homes and protect them against the evils of overcrowding, darkness, filth, and other unsanitary conditions—this, ultimately, rests upon the public, on you, individually and collectively.

By the organization of antituberculosis societies in your community, acting in conjunction with the National Association, you could start an educational campaign against ignorance, dirt, and disease that would have wide-reaching results. A discussion of the early symptoms of tuberculosis, the means of prevention and treatment by mothers' clubs and similar societies could not but prove helpful.

There is one thing more that you can do, and must do, and that is, contribute to the cause; for, surely, common humanity demands that we make provision for those who largely through no fault of their own have become waste products of civilization.

Should humanitarian motives not prove strong enough, there is still the driving power of self-interest which may spur us to action; for it is cheaper for the taxpayer to support an invalid in the early stages of the disease than to withhold help until the disease is well advanced, at which stage not only he must be taken care of, but those as well whom he has succeeded in infecting during his career.

Whether we break the endless chain depends on you. The prevention and the treatment of tuberculosis stand on a firm footing; the knowledge which has been obtained at great cost is useless, however, unless applied. The final outcome of this war on disease depends on whether the sinews of war are forthcoming. This again rests with you.

I believe you will rise to the task before you; and I believe that the present crusade is big with promise, in that you—the individual who constitutes the State—are learning at last to realize to what extent the country's health, wealth, and prosperity have been held in check by the greatest of scourges, tuberculosis.

Dr. C. V. Reynolds, Asheville: The question of tuberculosis is certainly a broad one. I don't know of any preventable disease that is before the medical profession today that is more important, or that more good can be accomplished in its eradication, than tuberculosis. I know Dr. Frazer well, and I know that when he used the term "cure" he did not mean cure in the common acceptation of that term. I feel and believe that he knows there is no such thing as a real cure in tuberculosis. Tuberculosis is a chronic disease with a tendency toward arrestment, but prone to relapses, and for this reason it is exceedingly dangerous to combat. Even in incipient cases we think that we have made a "cure," and in the morning we wake up and find that our patient had a profuse hemorrhage, which calls for a new effort. The early treatment

of tuberculosis is certainly essential to the arrestment of the disease, but the real benefit that we hope to get, I believe, is through education and prevention—educating the people, as I said this afternoon, that the serpent is in the sputum; not fearing the patient, but fearing his sputum. Educate them, then, to take care of the secretions, and we will in a short period of time accomplish great results in controlling, modifying, and limiting to a great extent this great scourge, tuberculosis.

Dr. Charles T. Nesbitt, Wilmington: Not only the tuberculosis question, but the problem that presents itself, tuberculosis of childhood, is an important question. Take measles and whooping-cough, for instance. They are supposed to be the natural heredity of children, but they are very much more important than you think. The doctor spoke of encouraging open-air schools. I think the time will come when we will have nothing but open-air schools. I think people will realize that in the public school attended by little children, where they spend the greater part of each day you have the most potent means of standardizing the health of the childhood of any community. The best way to prevent them from exchanging their diseases is to teach them in the open air or in a place unsheltered except above, where they will not come into contact with each other and where there will be the smallest chance of getting droplet infection. I think this is a matter that we all should think about. We are all familiar with the ordinary schoolroom and we are all familiar also with the tremendous outbreaks of the so-called minor diseases that occur just as soon as school opens. This is a matter that is certain to be one of the problems of the future, and I think the sooner we adjust ourselves to the idea of sending our children to open-air schools, where they will be wrapped up and protected from cold in the winter-time, but out of doors, just that much sooner we shall be able to control not only tuberculosis of the very young, but also scarlet fever and the other infectious diseases of childhood.

Dr. D. E. Sevier, Asheville: I consider that Dr. Frazer has read one of the most important papers that has come before us. I think a school inspector should be able to make the diagnosis of a school child who is in the earlier stages of tuberculosis; but what are you to do with these children? If you are in a schoolroom, as I have been, and find there a little child suffering from tuberculosis, probably not in a run-down condition, but seemingly strong and hearty, what more can you do than instruct them to take the necessary precautions to keep them from infecting their other classmates? We do not want to handicap the children by keeping them from school, but in the case of a child we know is run-down

physically you could exclude them from school, but there is no law by which you can say to a child, "You have to give up your school and stay at home." Again, gentlemen, it is the most heartrending sight that I have ever seen to tell a child that he will have to go home on account of his health. There is nothing that appeals to me more than this. Now, I think what we should do is to ask the State of North Carolina for a fund to erect a school and a boarding-house to take care of all these children. Outside of teaching them to take the necessary precautions, coughing in their handkerchiefs and taking the little sputum box, I don't see anything else that we can do, other than ask the State of North Carolina to make an appropriation to take care of these little boys and girls.

ELECTION OF OFFICERS.

The report of the Committee on Nominations was presented by Dr. C. V. Reynolds, as follows:

For President, Dr. D. E. Sevier, Asheville.

For Vice President, Dr. C. T. Nesbitt, Wilmington.

For Secretary-Treasurer, Dr. George M. Cooper, Raleigh.

This report was adopted and these officers declared elected.

ADDRESS OF Dr. D. E. SEVIER, PRESIDENT-ELECT.

Mr. President, Ladies and Gentlemen: I wish I could command appropriate words to express to you my sincere appreciation of the high honor which you have so kindly conferred on me. I consider it a high honor because it comes from the grandest organization, not only in the Southern States, but of any State in the Union. Your officers as you have selected them this evening can do but little alone; but, with the assistance of each individual health officer of North Carolina, I feel that we can carry this great organization on to success and do great health work in the future. I thank you.

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